

'It's Important to Know In Time'

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The Newspaper of the Industry

REFRIGERATION

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By George F. Taubeneck

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Ultra Low-Temp

Biggest news in refrigeration engineering is connected with developments in ultra-low temperatures. These developments, all in connection with war projects of the "hush-hush" variety call for the production of temperatures running down to minus 350° and even lower.

A few short years ago minus 10° F. was considered "low temperature" refrigeration. Now some of these projects—requiring three and four-stage refrigeration and pre-cooling—are approaching absolute zero (minus 460°). It breaks our heart not to be able to publish more about this research, but it's a military secret.

Top Layer

One of Washington's pet terms (some day we're going to run a Lexicon of Bureaucracy) is "layer." It is somewhat synonymous with "level," and means "relative rank in the line of authority." The State Department calls it "protocol."

The President, of course, is at the top.

Underneath him now is a "layer" of, for all practical purposes, assistant presidents. These are Leahy (war), Byrnes (internal economy), Wallace (post war), and Hull (diplomacy). Wallace and Hull somewhat overlap, and if Wallace gets too far out on the limb, Hull may edge him out.

Hats in the Ring

Indications of a Fourth Term movement are already appearing, but this time it does not seem to have the tacit Roosevelt support that the Third Term movement had. This time some other heads have been allowed to lift themselves above the mob.

Front runners include Wallace, McNutt, and Byrnes. Winant and Douglas are the dark horses.

Wallace and McNutt are targets, and may eliminate themselves. (New Dealers hope McNutt will, fear Wallace will).

Byrnes has somewhat stepped into a Farley position—an immensely popular and able politician who may have an eye on the presidency.

The Republican candidate might be a popular war hero, if the war is won in time. Otherwise, a governor with a good record, probably.

Rickenbacker for President

Capt. Eddie Rickenbacker is now in the forefront of the latter "white hopes." He has captured the imagination and affection of the people as has no man since Will Rogers.

As Stanton said of Lincoln, "the first qualification of a candidate is that he be able to get votes," it is pointed out that Rickenbacker would be in line to get the soldier vote from two wars. He was an outstanding hero of the last war, and is idolized by today's soldiers and sailors, whose thoughts he has so cogently expressed.

He is the first presidential possibility in years who might bring out the religious vote (he gave credit to prayer for his rescue). He is an outstanding business executive. He makes and keeps friends with the (Concluded on Page 5, Column 1)

Cylinder Returns Must Be Speeded To Save Supply

DETROIT—Refrigerant supply agencies have received an urgent plea from Sterling Smith, Chief of the Refrigeration Section of WPB and Administrator of Freon Order M-28, to expedite cylinder returns.

Mr. Smith wired such agencies as follows:

"Freon cylinder situation becoming increasingly serious and production threatened unless return of cylinders is improved. Pursuant to Paragraph 'F' General Preference Order M-28 and Paragraph 5 of Certification on Form PD-160, we ask that you check your sales records and in the case of any sale over 30 days old, obtain at once immediate returns of cylinders whether full or empty. Hold full cylinders against February allocation and return empties to Carney's Point at once.

"We shall extend our fullest co-operation in assisting you to obtain return of cylinders in any case of customers' reluctance you care to report to us.

"This applies to all sales including civilian, governmental agencies, or armed forces.

"Please notify all of your customers."

Dinegar Appointed Chief of Consumers Durables Branch

WASHINGTON, D. C.—Henry Dinegar has been appointed Chief of the Consumers Durables Branch of the War Production Board's Office of Civilian Supply.

Under his direction are three sections: the Consumer Durables Section (under Leonard Koser), the Service and Technical Equipment Section (under Oscar Meier), and the Medical and Health Supplies Section (under Dr. Fischelis.)

These sections have the following units:

Consumer Durables Section:
Domestic Appliances and Household Wares Unit

(Concluded on Page 16, Column 3)

Sherer-Gillett Elects Ruddock Vice President

MARSHALL, Mich.—Election of G. E. Ruddock to the vice presidency of Sherer-Gillett Co. and appointment of R. E. Church to the position of secretary are announced here by President J. H. Coolidge.

The new vice president has been associated with Sherer-Gillett during his 27 years in business. Mr. Church joined the firm in 1929.

Philco Issues Catalog Showing 'Alternate' Products for Dealers

PHILADELPHIA—To conserve gas and tires and still make it possible for Philco distributors to maintain contact with their dealers, Philco Corp. is issuing a catalog of the new products it has secured for dealers to sell, it was announced by Thomas A. Kennally, vice president in charge of sales.

Via the new catalog, dealers can place orders with their distributors without waiting for a salesman's less frequent calls under today's war conditions. Requests for the catalog are being received in large quantities and are expected to total several thousand copies.

"Issuance of this catalog is one of the things that Philco is doing to help its dealers during a very trying

Advisory Group Studies Need of Water Coolers

Producers Get Go-Ahead From WPB To Report on 'What Is Essential'

WASHINGTON, D. C.—Plans to conserve steel, copper, and other critical materials used in the manufacture of self-contained drinking water coolers, plus a study of the essential needs for water coolers, were considered at a recent meeting of the Water Cooler Industry Advisory Committee and WPB officials.

The official WPB statement concerning the meeting was as follows:

"Realizing the need for comprehensive information on the possibilities of conserving critical material, a task committee was appointed to study the following specified questions and report to the Industry Advisory Committee.

"(1) When and where, if at all, it is essential that mechanical self-contained drinking water coolers be made available in industrial plants, hospitals, or other establishments.

"(2) What standards are applicable in determining essential need in a particular case, with respect to the number of employees supplied per cooler, the maximum water temperature consistent with health, and other factors.

"(3) How many installations of such coolers will be called for, estimated on the basis of essential need.

"(4) What quantities of copper and steel or other critical materials are fabricated for the manufacture of such coolers to the extent that any other use of the materials would be impracticable.

"Members of the task committee (Concluded on Page 16, Column 1)

Refrigeration Output Not Affected by Fire At Copeland Properties

SIDNEY, Ohio—Refrigeration production of Copeland Refrigeration Corp. was in no way affected by the fire of Jan. 14 which razed the company's aircraft parts manufacturing plant, Copeland officials re-emphasized last week.

The fire caused damage amounting to \$750,000, this damage being adequately covered by insurance, it was stated. Rebuilding and re-equipping of the plant is already underway, with the Army Air Corps lending its support, so that aircraft parts production will be resumed in a matter of weeks.

Restrictions More Definite In Revised P-126 Order

Service Group Seeks Higher Prices for Rebuilt Appliances

DETROIT—Members of the Detroit Electrical Appliance Service Association resolved as a group Jan. 22 to present a united appeal to Washington for relief from ceiling prices established in certain Maximum Price Regulations affecting their trade. MPR 139 governing sale of used refrigerators and MPR 294 governing sale of rebuilt vacuum cleaners were the particular thorns in their flesh, the discussions at their meeting revealed.

During an evening's discussion with OPA representatives in the Fort Shelby hotel here, association members decided that these regulations in particular established such low ceilings that service men could not afford to repair used appliances at current costs and sell them at the resale prices permitted.

At a business meeting which followed the discussion with OPA, members passed a two-fold resolution: to unite in appeal to Washington and to expand local membership so the group would represent a majority of appliance men in the Detroit area. All electrical appliance dealers in the city had been invited to hear the OPA speakers.

Problems concerning ceiling prices were brought out in a question-and-answer period that followed talks by Robert Watson, Detroit OPA counsel and enforcement attorney, and Roger L. Warnshuis, price specialist in charge of durable goods.

Specific point made in connection with low ceiling prices of regulation 139 centered in one dealer's asking whether, after installing \$65 high side apparatus to put a used box into working condition, he must still sell the box at the \$49 ceiling price fixed for that model in the regulation. "Yes" was the answer given.

In further discussion, dealers decided that no model recent enough to bring a good rebuilt price through the ceilings established in the regulation would fit the somewhat expensive high or low side replacement.

Questions asked about the regulation covering rebuilt vacuum cleaners (Concluded on Page 4, Column 4)

Business Leaders at Carrier Conference

SYRACUSE, N. Y.—With cooperation among manufacturers as a keynote a two-day meeting of representatives of leading industries was held here Jan. 14 and 15 on postwar planning, the conference being sponsored by Carrier Corp.

In opening the sessions, J. M. Bickel, head of the Carrier planning group, remarked that this is the first time since the war started that a group representing so many different business interests had come together to discuss planning for the future.

"American industry," Mr. Bickel stated "has made a convincing demonstration of fundamental soundness in its fulfillment of the boundless requirements of the victory program. Industry must make definite plans now if it is going to be equally successful in maintaining employment and the flow of essential goods after the war."

Subjects discussed included postwar employment, production, marketing and distribution. The planners (Concluded on Page 16, Column 4)

Individual Appeal Can Be Made To Relieve Bans on Comfort Cooling, New Firms

WASHINGTON, D. C.—There are more changes in the revised Preference Rating Order P-126 as amended Jan. 19 (text of the amended order was published in the Jan. 25 issue of the NEWS) than many may have noted in a first reading.

In the amended order preference ratings which may be assigned by any "emergency service agency" to secure parts for repair and maintenance have been classified as follows:

Class I—A rating of AA-2X. For repair of a "system" used primarily to process, transport, or store food and dairy products for the Army, Navy, Maritime Commission, or War Shipping Administration, or used in cold storage warehouses, commercial ice manufacturing plants, car icing plants, meat packing houses under U. S. inspection, blast furnace air conditioning, or industrial or commercial processing of materials or products for delivery under "defense orders." The person applying this rating must notify the WPB promptly by telegram or letter explaining the circumstances requiring this rating, the material obtained, and the name of the supplier.

Class II—A rating of AA-3. For repair of a "system" used to process food or food products (not including

A READING 'MUST'

Any refrigeration service or serviceman that operates subject to the conditions imposed by Order P-126 as revised Jan. 19 should make it a "must" to read through the entire revised order (as published in the Jan. 25 issue of the NEWS) and the discussions of the terms of the order in the news story which starts in this column.

processing of dairy products on a farm), preserving blood plasma, pharmaceuticals, or foods in a hospital; transporting or storing of food and dairy products except in retail establishments or for domestic storage.

Class III—A rating of AA-4. For repair of a "system" used to store food in a retail establishment, for deliveries of materials to maintain an emergency service inventory, and for the repair of all other refrigeration and air conditioning equipment not included in Class I or II, but not including domestic refrigerators or "comfort cooling systems."

No preference rating under this order may be assigned for the repair of "comfort cooling systems," which are defined in detail in the amended order, particularly as to the type of establishment in which such systems are installed.

It is understood that the owner or lessee of a "comfort cooling system" may request permission to have a designated emergency service agency apply a rating under P-126 to obtain repair parts by telegram or letter addressed to the Refrigeration and Air Conditioning Section, General Industrial Equipment Division; Reference: P-126, Washington, D. C. The owner or lessee must explain fully the unusual circumstances requiring continued operation of this particular "comfort cooling system."

Refrigerating and air conditioning equipment has been redefined as a "system" in such a manner that it definitely excludes heating or humidifying equipment and is confined solely to equipment designed primarily to lower the temperature of, or remove water vapor from, gaseous, liquid, or solid matter. (Concluded on Page 16, Column 1)

Refrigeration and Air Conditioning As a War Production Tool

By L. W. Clifford, Sales Development Section Supervisor,
Westinghouse Electric & Mfg. Co., East Springfield, Mass.

7. Testing and Storage Of Parachutes and 'Chute Material

The greatly accelerated tempo of plane production and flying personnel training, together with the advanced technique of troop and material dispersion from the air has created an enormous demand for parachutes of all types and sizes.

This situation, coupled with our inability to obtain the silk from which 'chutes have in the past been made, has created an enormous new market for our domestic Nylon and Rayon producers. One single government order was for about 60,000,000 square yards of Nylon and Rayon fabric for the manufacture of 'chutes.

Each 'chute application calls for a specific type of material, for which very rigid government specifications have been written. Passenger or "escape" 'chutes use Nylon, as a rule, and for bomb load, supply and flare 'chutes a rayon fabric of various weights and weaves is used.

Dozens of mills and mill agents throughout the country are supplying these materials, all of which, before acceptance by the government, must pass very rigid tests to assure that the specifications are met. A

complete visual scrutiny of every yard of each 400 yard roll of material is made under strong fluorescent light by experienced examiners.

Then from each roll a 1/2 yard sample is taken and, in special air-conditioned laboratories, subjected to a further series of tests. A permeability test establishes the resistance of the fabric to a metered stream of air forced through it. This quality affects the opening and maneuverability of the 'chute. The thickness of the material is measured to within one-tenth thousandth of an inch and, for each sample, the weight in ounces per square yard is determined. Tests of the tensile strength of a one inch wide sample of the warp and filling are recorded on special charts for each roll. Fabric elongation of each sample under a given tension are similarly recorded.

Whether these tests are made by the producing mill, by a laboratory working under contract or by the mill agent the requirements of testing conditions of temperature and relative humidity are standardized by the textile industry.

The tendency of fabrics to absorb moisture from the air and thereby undergo changes in physical properties make necessary the extremely close control of temperature and relative humidity in the laboratory

where the foregoing tests are made. As the rule the fabric sample to be tested must hang loosely in the laboratory for a period of four hours before the tests are started.

The standard conditions for testing are 70° F.D.B. \pm 2° and 65% R.H. \pm 2%. As a consequence the job must be carefully engineered from the standpoint of occupancy, heat leakage, infiltration and fresh air supply and special controls and recording instruments used.

After the materials have been fabricated into complete 'chutes we encounter another refrigeration problem in the 'chute storage rooms at the large number of flying schools, aviation bases and aircraft plant test fields throughout the country.

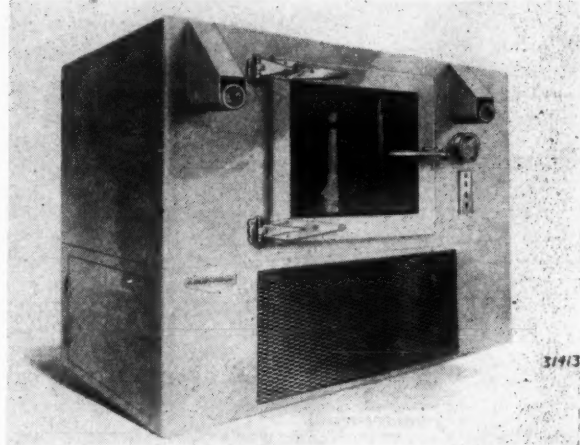
On those jobs of this type with which we have been in touch, the conditions may be held between 55° F.D.B. minimum and 50% R.H. in winter and 90° F. D.B. maximum and 50° R.H. in summer. This, of course, requires only a balanced job of heating, humidification and cooling.

Borden N.R.S.J.A. Alternate On Refrigeration Council

DETROIT—In the news story concerning the formation of the National Refrigeration War Council in the Jan. 18 issue of AIR CONDITIONING & REFRIGERATION NEWS, omission was made of the name of the alternate member of the National Refrigeration Supply Jobbers Assn.

C. E. Borden will be the alternate to N.R.S.J.A. President Alex H. Holcombe, Jr. on the Council. Mr. Borden is with the A. E. Borden Co., Boston, and is the immediate past president of the Association.

A Refrigeration 'War' Product



Self-Contained Temperature Testing Unit Provides Conditions In 3 Ranges

LANSING, Mich.—A new "Hi-Low" machine offered in three temperature ranges to provide conditions for stringent testing of aircraft instruments, batteries, wire, metals, and various devices has been developed here by the Kold-Hold Mfg. Co.

An entirely self-contained machine that requires only a source of electrical power, the new "Hi-Low" measures 84 inches high, 52 inches deep, and 94 inches long, with a net clear usable working space of 48 inches by 36 inches by 36 inches. It is constructed throughout by 16-gauge steel, welded and chemically treated for paint adhesion, and insulated with 8 inch Fiberglass in sides, top, and bottom.

Temperature ranges of the three models offered are —60° to +170° F.; —80° to +170° F.; and —90° to +170° F. To illustrate performance, Kold-Hold explains that in model 3600 HL90 temperature can be lowered from ambient of +80° F. to —60° F. in 45 minutes, to —70° F. in one hour, to —80° F. in 85 minutes; and to —90° F. in 140 minutes.

Similarly, heating to +170° F. from —90° F. is brought about in 90 minutes; from —80° F. in 85 minutes; from —70° F. in 80 minutes; and from —60° F. in 75 minutes.

Strip heaters are located in the air stream for defrosting and rapid heating in the "Hi" side of Kold-Hold's new product. In the "Low" side, finned type coils are used. Forced convection air distribution moreover provides a high degree of air circulation in the working space for rapid heat transfer.

Condensing unit of the "Hi-Low" is a 5, 7 1/2, or 10 hp., 2-stage, air-cooled "Freon-12" or "Freon 22" machine as specified. Temperature recording and controlling instruments are provided to meet usage requirements.

Interior of the cabinet is lighted by

Controls Find Wide Use In Army Auditoriums

MINNEAPOLIS — Some of the largest business handled in recent years by the air conditioning controls division of Minneapolis-Honeywell Regulator Co. is being completed now for the United States Army in supplying heating and ventilating controls for more than 500 theaters built on Army bases throughout the country, reveals John E. Haines, division manager.

He explains that the large dollar volume of orders for the equipment was received in small groups at a time.

The Army auditoriums, says Mr. Haines, seat from 600 to 1,000 soldiers each and are heated and ventilated with standard equipment. "Their automatic controls are identical to those used in civilian theaters and other space-heated buildings," he adds.

Representative of the pace set by the Army in its theater-building program is the story of a Minneapolis-Honeywell salesman in Texas who, learning that an Army contract had been awarded to a local builder, asked to bid on automatic controls. It is reported that although the contractor refused to give the order until he had contracts for an even dozen theaters, just two weeks later the Minneapolis-Honeywell salesman was asked to ship 12 complete sets of controls to Army cantonments in the state.

two 40-watt Lumiline lamps controlled from a switch on the right-hand side of the door. All operating switches are on the front of the machine. The "Hi-Low" door is standard but several variations in size and location can be obtained. Special conduit openings, terminal panel, and binding posts also are available as accessory equipment.

Office of Civilian Supply May Speed Simplification In Field of Distribution

WASHINGTON, D. C.—A study of the progress that has been made to date in simplification and standardization in the field of distribution will be made for the Office of Civilian Supply, WPB, reports Joseph L. Weiner, Director.

In charge will be Irwin D. Wolf, Pittsburgh merchant and consultant to Mr. Weiner, who has been engaged for several weeks in a similar study of the progress of simplification and standardization of civilian goods.

Explaining the reason for the second study, Mr. Weiner said that progressive restrictions upon raw material for the manufacture of civilian products, and the heavy drains of war production upon manpower, are creating an increasingly serious problem for the approximately 2,000,000 retailers and wholesalers in this country.

Both studies are in line with carrying out a request of James F. Byrnes, Director of Economic Stabilization, that WPB undertake a vigorous program of simplification and standardization.

"Completion of this survey," Mr. Weiner said, "will give us a full picture of the extent of simplification to date and will provide the basis for a constructive program of action to maximize production of civilian goods and assure an efficient minimum distribution system."

Official Booklet Ready On Small Stores' Record

NEW YORK CITY—"Record Keeping for Small Stores," the title of a new booklet, announced recently by the Senate Small Business Committee, has been prepared to study the problems of small business, according to Senator Murray, chairman.

The monograph of 93 pages shows how the records of small stores may be kept with a minimum expenditure of time and effort and sets forth in practical terms the procedures and forms for record keeping necessary for intelligent management.

A "one-book" system that will furnish store owners all business facts and also the data required for the preparation of income, social security, Federal excise and State local sales tax returns are also included. Copies may be obtained from the Superintendent of Documents, Washington, for 30 cents a copy.

O'Keefe & Merritt Co. Adds To Its Space

LOS ANGELES—O'Keefe & Merritt Co. here, ordinarily manufacturing gas ranges and electric refrigerators, has added 7,500 square feet of storage space.

COOPERATION WINS THE WAR



WOLVERINE SALUTES MEMBERS OF ACRMA

The Air Conditioning & Refrigerating Machinery Association—usually identified by the contraction, ACRMA — started its existence back in 1903 as the Ice Machine Builders of the United States, which later became the Refrigeration Machinery Association. In 1940 it was combined with the Air Conditioning Manufacturers Association to form the present ACRMA.

It concerns itself with anything that affects the industry as a whole, and the activities it has sponsored during the past four decades have been important contributions.

The membership consists of the leading manufacturers of refrigerating machinery, whose purposes are aptly expressed in the By-Laws in these words: "... To collect and disseminate information of value to its members and to the public regarding products of the industry ... To encourage advancement and improvement in all branches of the industry by the promotion and support of investigations, experiments, standardization, research, and collection and distribution of statistics and information of value to members ..."

As a part of this great industry, which is today devoting its wholehearted support to the war effort—and as a supplier of miles and miles of quality copper tubing this industry normally uses — Wolverine salutes the many outstanding achievements of ACRMA — and pledges continued support of its high purposes.



C. E. WILSON
President of Air Conditioning and
Refrigerating Machinery Association



CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
WOLVERINE TUBE DIVISION
Seamless Copper — Brass
1413 CENTRAL AVENUE
DETROIT, MICHIGAN

Another "SERVICE" from Kelvinator!



Kelvinator's "Simplified Training Course for Service Men" Enthusiastically Received by Dealers and Utilities as a Timely Contribution to the Refrigerator Industry!

Looking ahead, early in 1942, Kelvinator foresaw the growing shortage of refrigerator service men, and the need to fill their ranks with trained replacements.

In a sincere effort to be of service to the refrigerator industry and to the millions of refrigerator owners, Kelvinator created and made available, last fall, to all dealers and utilities a "Simplified Training Course for Service Men"—for *all* makes of refrigerators!

This program was undertaken because Kelvinator, in examining available training materials, found them too elaborate to meet the needs of the emergency—which called for clear, concise, complete instruction in simple, down-to-earth language any man or woman without technical training could readily understand.

Briefly, the Kelvinator "Simplified Training Course" is adaptable for use

either by utilities with large training schools, or by one-man service setups in small towns. While simplified and made easy to learn, the scope of the course is amazing. Study of the profusely illustrated and simply written 236-page "Training Course" and the "Trouble-Shooter's Guide" should enable anyone to be trained in a very short time to diagnose refrigerator troubles and to repair them, regardless of make.

Total cost of the Training Course is twenty-five cents... the handy Trouble-Shooter's Guide, five cents... priced only to control distribution. The Instructor's Manual is supplied free for group training.

For copies of the Simplified Training Program material, contact your local Kelvinator distributor or zone—or write direct to Nash-Kelvinator Corporation, Detroit, Michigan.

Hundreds of Letters Complimenting Kelvinator On This Forward-Looking Program Have Been Received from Dealers and Utilities

BUFFALO, NEW YORK:
"... an excellent piece of work... invaluable for instruction of needed service personnel."
SCHWEGLER BROS., INC.

INDIANAPOLIS, INDIANA:
"The industry owes another debt to Kelvinator... for service rendered to the electric refrigerator user."
INDIANAPOLIS LIGHT & POWER CO.

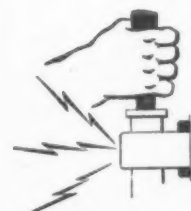
MIAMI, FLORIDA:
"No other training material could possibly fill such a large and immediate need."
FLORIDA POWER & LIGHT COMPANY

SAN ANTONIO, TEXAS:
"The course will improve the efficiency of the service man."
WESTBROOK COMPANY

LOS ANGELES, CALIFORNIA:
"... represent the finest contribution to the service problem we have yet seen."
PACIFIC COAST ELECTRIC ASS'N.

DECATUR, ILLINOIS:
"A very practical contribution toward keeping appliances going during this extremely critical period."
ILLINOIS IOWA POWER COMPANY

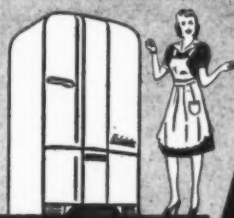
DETROIT, MICHIGAN:
"Without a doubt the best yet to reach our field of service."
JOHNSTON REFRIGERATION CONSTRUCTION CO.



SCRAP IS POWER

Cooperate With Your Industry!
Salvage All Inoperative Parts
Containing Critical Materials...
Put Vitrally-Needed Scrap Back
Into the Scrap TODAY!

LOOK AHEAD WITH



KELVINATOR

DIVISION OF NASH-KELVINATOR CORPORATION, DETROIT, MICH.

Ranco Honored with 'E' for Army-Navy Production

COLUMBUS, Ohio—For "high achievement in producing materials needed for war," the Army-Navy Production award, a coveted "E" flag, was presented Jan. 19 to officials and employees of Ranco, Inc., an impressive ceremony that attracted ranking state, Army and Navy officials and a near-capacity audience to the Columbus Auditorium.

"We are facing the greatest task in history and you men and women are partners in accomplishing this task," declared Lt. Col. Theodore H. Eickhoff, chief of the industrial service division of the Cleveland ordnance district in presenting the flag to General Manager E. C. Raney of Ranco.

Token "E" lapel pins, emblematic of similar pins that will be presented to the plant today to every employee on the pay roll Dec. 26, were presented to three representative employees, John S. Boyd, an employee of the firm since 1915; Miss Edna Burleson, elected to represent employees, and Leo Connolly, an employee who has five sons in the Army and one in the Navy, by Lieutenant Commander A. E. Poor, inspector of naval aircraft at Port Columbus.

Governor Bricker of Ohio, reviewing conversion of the plant from peace to war production, told employees:

"I bring to you the congratulations of the people of Ohio for your achievement. You are entitled to the



Lt. Col. T. H. Eickhoff (left) presented Ranco's "E" flag to John S. Boyd, Miss Edna Burleson, and Leo Connolly, employee representatives, and E. C. Raney, general manager.

everlasting gratitude of soldiers, sailors, fliers and Marines for the strong help you are giving them and you also are entitled to the gratitude of all peoples around the world who love liberty."

As a fitting background for the program a huge American flag made in 1864 and containing only 36 stars,

was draped across the wall to the right of the stage. It was presented by grateful Ohio congressmen to David Nevil Murray of Portsmouth, Ohio, for his manufacture of cannon balls for the Union Army during the Civil War. His great-grandson, Donald Harper Fisher, is now engaged in war work at Ranco.

'Americans at Home Must Keep Nation Free For Returning Fighters,' Pierce Tells Sailors

GREAT LAKES, Ill.—America's greatest responsibility, in addition to supplying the instruments with which to win the war, is to do everything in its power to keep the U. S. the same free country it has always been so that every service man will have the right and the opportunity to work at his own job when the war is over, 1,087 sailors and 25 Marines were told here Jan. 18, by Frank R. Pierce, vice president of Nash-Kelvinator Corp., one of the nation's big producers of war material.

ADDRESSES NAVY CLASS

Speaking before a graduation class of the Service School here at the U. S. Naval Training Station, Pierce, a veteran of the last war, assured the men that there is a solemn recognition within the people on the home front of the tremendous sacrifices fighting men are making and pledged that those left would not only produce all the arms possible, but would strike to plan for a post-war period wherein there will be opportunity for all.

"I believe if you were talking to me about what is really on your minds," Pierce declared, "you would be saying: 'While I am away fighting for my country, be sure to keep it what it is today so that I, too, will have an opportunity when I return. When I do come home from war, I want you to have kept for me these things—the right of a man to a job and his right to be his own boss; the right of a man to think and speak his thoughts, to worship, love and hope, the right to a future and to a just reward.'"

JOBS AHEAD

"If there is any promise that I can make to you which will be backed up with all that it is in the power to those of us left on the home front," he avowed, "it is a promise that we will do just that."

Recognized as one of the country's top salesmen, Pierce said that American service men had a mighty selling job to do. "What you've learned about fighting is your selling story," he told graduates, "and your guns and your bullets are your selling equipment. Your prospects

are Hitler, Hirohito and Mussolini, and you want to sell them the idea that the world is not theirs to do with what they please; that they too on too much territory when they took on the U. S. A.; that peace-loving countries are not necessarily always peaceful and submissive; and that the four freedoms—freedom from want and fear, freedom of speech and religion—shall live on this earth regardless of their insane ideas and plans."

"And when you make this sale, your reward will be the greatest any salesman ever received. You will be able to return home to a free America, the kind of America you and I both know is worth fighting for."

NAVY MEN PRESENT

Pierce was introduced by Capt. F. J. Lowry, commanding officer of the station here, who presented certificates of course completion to honor graduates. Other graduates received certificates from Capt. H. R. Harris, Service School Officer who presided at the ceremony, and Lt. Comdr. Charles Waters, Service School executive officer.

Graduates had completed 16-week technical courses to become Navy specialists. The Service School here offers courses in 19 of the 49 trades taught men in the U. S. Navy.

Pierce Addresses Navy Graduates



Frank R. Pierce, vice president in charge of sales, Nash-Kelvinator Corp., Detroit, is shown addressing a group of 1,087 sailors and U. S. Marines graduating from the Navy Service School at the U. S. Naval Training Station, Great Lakes, Ill., Monday, Jan. 18, 1943. Officers shown in the background are, left to right: Lieut. R. A. Elson, USNR; Lieut. Comdr.

Detroit Service Group Plans Appeal on Ceiling Prices of Rebuilt Appliances

(Concluded from Page 1, Column 4) ers brought out the fact that electric cords required by the order must be obtained on AA-5 ratings, available to few appliance dealers. As the regulation stands today, it was decided, sale of used vacuum cleaners is made almost impossible.

In weighing flat charge for appliance repair against a rates- (labor, overhead, profit) plus-parts basis—two pricing methods defined in MPR 165 covering Services—complaint was made that many customers want an immediate repair price quoted within the dollar and will not accept a price estimate fixed on rates-plus-parts after the appliance has been examined.

Service men further contended that after an appliance is taken apart in a shop so that amount of work to be done and approximate cost of repair can be adequately determined, customers often object to the high price quoted, ask to have the appliance returned, and let the service man stand the loss of disassembling and reassembling alone.

The offer "Free Estimates" formerly featured by some dealers was considered partial cause for this situation. It was suggested however that with the appliance market as tight as it is today, service men could now afford to be in "no position to give a price" to customers until the estimate had been made to their own satisfaction.

One appliance dealer told of difficulties he was experiencing in finding basic labor costs since in March, 1942—base period under MPR 165—he was repairing machines on the basis of price for the whole job, quoted after the appliance had been examined. OPA speakers explained that labor costs could be determined by working backwards from the various total prices he had used in March by breaking them up into component parts.

These prices actually included costs of labor, overhead, and profit, they pointed out, although the service man did not stop to analyze expenses as he gave his price estimate on a repair job.

"If you start thinking in terms of all expenses covered by the cost of a single job, you may find you were undercharging in March, 1941" and will be money ahead when you begin regular pricing after the war," Mr. Watson and Mr. Warnshuis suggested.

Other points of advice given in answer to questions included:

A dealer or service man must offer today the same guarantee on his appliances that he offered to customers in March, 1942.

If you receive a license warning notice in connection with MPR 165, start getting your business records in order so they will stand inspection by OPA officials.

There is no price control on selling personal goods. Hence, if an individual householder was breaking up his home and wished to dispose of certain electrical appliances in his

possession, he could sell them privately at any price he could get for them.

Both OPA men advised appealing for relief through association action. According to Raymond M. Shock, executive secretary of the group, similar pressure from EASA had been influential in having the electrical appliance repair business declared essential in the Selective Service guide recently issued by War Manpower Commission.

Earlier in the program, Mr. Warnshuis told the group that OPA seemed to be entering its third phase of operation, a trend toward specific regulations marked by consolidation, simplification, and pricing schedules adapted to varying geographical factors.

Three tendencies will characterize this phase he predicted: fixed margins, dollar-and-cent prices, and simplified formulas. He suggested that hereafter a general regulation will be issued to be revised by regional offices to meet geographical variations of their district offices.

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A large organization, situated in a Southern city, requires the services of five men thoroughly experienced in commercial refrigeration equipment to act as classroom instructors—three to have experience in Freon and two in Ammonia.

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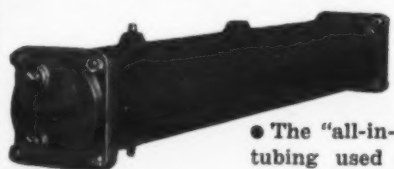
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Inside Dope

(Concluded from Page 1, Column 1)

ease and prodigality of a Jim Farley. And he is lucky.

Chief objection—that he alienated labor in his Detroit speech—may eventually turn out to be in his favor, providing the war ends soon enough and the boys in uniform come home to vote and campaign.

Flyer D'Olive

Speaking of Rickenbacker, it may be news to a great many that calm, modest, unperturbable, pipe-puffing Charley D'Olive, chairman of the refrigeration division of Nema, was a flying-mate of Rickenbacker's in France.

They flew on fighting missions together, and Charley saw Rick shoot down his first German plane. (No American flyer in this war has yet approached Rick's score in the last war).

At home Mr. D'Olive has pictures of Rick and himself beside the tattered old crates they used to fly.

Britain's Production

There's no reason for America to feel inferior because of published reports that Britain is out-producing us, man-for-man. British figures on "finished products" do not take cognizance of the fact that a considerable proportion of the raw materials and parts that went into those finished products came from the United States.

However, there's no mistaking the fact that Britain has done a marvelous job of mobilizing her labor force for war—much more completely than we have—and that British labor works longer hours and more steadily.

The big difference is the effectiveness of our mass production methods. Our man-hours-needed per finished product are less than those of any nation in the world.

Get Set on CMP

Just because you are operating on PRP during both first and second quarters of this year is no reason to be lax in your efforts to get set on CMP. The Controlled Materials Plan definitely will be superimposed on PRP during that period, and should have completely superseded it by the third quarter of the year.

February 9 is the deadline for Prime A producers to file their CMP applications. It is also the deadline for B product manufacturers to file CMP-4B's with the WPB.

Orders carrying CMP allotment numbers have the right of way. In other words, in order to be sure of getting a sufficient supply of controlled materials—particularly steel, copper, and aluminum—get on the CMP bandwagon at once. This is straight from the feedback.

What To Do

Regional WPB field office can help you get started under CMP, if you are not already at work on it. First, of course, you must find out whether your products are "A" or "B" products.

If they are "A" products, your steel, copper, and aluminum needs must be initiated by a Claimant Agency (unless you are a subcontractor and can get them through your prime contractor).

Claimant Agencies include, Army, Navy, Maritime Commission, Lend-Lease, Board of Economic Warfare, Office of Civilian Supply, Office of Defense Transportation, Office of Rubber Director, Petroleum Administration for War, Department of Agriculture, Aircraft Resources Control Office, National Housing Agency and Food Administrator. If not under any of these jurisdictions, go to the Facilities Bureau of the War Production Board.

Work toward bills of material for a production schedule. CMP is a plan to control the flow of scarce materials in an orderly fashion. It's applying the old merchandising principles of fast turnover so as to make available raw materials go further. Inventories generally will be held down to a 60-day supply. All will benefit—so don't begrudge the necessary paper work.

You can continue to work under PRP authorization until you get your first CMP allotment, but don't delay your own work on the latter.

Your Labor Problem

Do not take it easy and expect the government to provide you with necessary workers. Despite the talk, no labor draft, or compulsory registration of women, is planned.

Local trials of the latter prove that when women register, a great many expect to be put to work right away. They get mad when that doesn't happen. In this connection, it should be noted that the shortage is not of just "labor," but skilled labor.

If you are planning to augment your labor supply through training programs for women, however, there's one important thing to do now:

Double your toilet facilities. Overlooking the simple fact that men and women require separate toilet facilities has proved embarrassing to a surprising number of plants. When they added women workers, they couldn't use them.

The Nugent Plan

Interesting features of OPA Rolf Nugent's plan to collect installment payments now for postwar delivery of consumer goods is that so far it applies only to four products: household refrigerators, automobiles, home heating plants, pianos.

Later, it may be expanded to include washing machines, ranges, radios, television sets, air conditioners, and prefabricated homes.

Incentive is offered the buyer by giving him priority on delivery when product is available. Incentives to the seller: keeps business going, preserves trade names and sales force.

It's not in operation yet, but deserves careful consideration. Hotpoint and Norge are pushing similar plans privately.

Purchase Orders

Bogged down and goggly-eyed after wading through the complicated orders, amendments, procedures, and suchlike for getting materials—which comprise so important and difficult-to-edit a part of AIR CONDITIONING & REFRIGERATION NEWS these days, a subscriber sent us the following essay. No doubt all prime contractors and subcontractors, to say nothing of jobbers, will appreciate it. Here it is, verbatim:

WE BUY TWO NUTS

Interdepartmental Memo—to All Employees—Outside of Production Dept.

Subject—Purchase Orders.
From E. O. Approved by P. S. per V. E. V.

There seems to be some confusion in the minds of many of our employees as to the methods this company uses in the purchase of various parts and pieces supposed to be attached to airplanes. The purpose of this memo is to clarify the simple procedure we follow. To illustrate our methods we will use a simple hypothetical example.

Suppose our company completes the fabrication of an airplane. Just as we are about to push it out the door a workman discovers that the Engineering Department in designing the plane failed to provide two nuts needed to hold the tail wheel brake band in place. It now becomes necessary to acquire these nuts. So what do the workmen do? After lunch they notify the leadman; the leadman notifies the foreman who calls in the department clerk who issues a shop order (S.O.).

This shop order is issued in quadruplicate. One copy goes to our general manager, one to the shop and one to the outside production department. The other copy is thrown away. Now we have a shop order.

After traveling about the plant for a day or two the shop order arrives at the Outside Production Department. To it, however, have been attached various papers including 16 blueprints and an authority card. The authority card is of no special importance and can be ignored in the discussion. Its principal use is to have something to pin the shop order, blueprints, and so on to while in transit.

These papers arrive at our department on the 8 a.m. mail at 9:30 in the morning. Promptly at 11:15 the same morning, 17 engineering orders No. 426849-326-1 arrive. By adding the last five numbers together, we know at a glance that these 17 engi-

neering orders should be attached to the 16 blueprints on the nut order.

What happens is that after the shop order was issued, someone discovered the only tool available at the tail station for applying the nuts was a hexagon wrench, a situation not provided for in the blueprints. Now we are ready to get bids. Bid requests are sent out to three nut factories in accordance with Government regulations. Only one bid comes back so we decide to order the nuts from the National Machine Production Co.

The next step is to issue the actual purchase order. This operation is started by a group of persons in the write-up department who, working together, produce a paper known as a requisition. On this paper the writers place various marks, signs, and blind figures. This is done by passing the paper back and forth until it is filled out.

The requisition is then turned over to the Hecto-writer who types a master copy of the actual purchase order. This is done by simply copying the date shown on the requisition and then adding various quotations, paragraphs, phrases, priority ratings, terms, in fact, most anything, a quotation from the Bible usually goes over big.

The master copy of the purchase order is then turned over to Mary who discovers 67 errors. She sends it

back for correction. Forty-nine of the errors are corrected, 18 missed, and seven new errors made in making the corrections. The purchase order is now ready for the ditto machine. On this machine, 382 copies of the order are produced.

The first sheet, though it is usually spoiled, is then known as the first copy. This is sent to the vendor along with a rule book, 17 acknowledgments, and a greeting card from our president. The other copies are distributed to the Army, Navy, Marines, General Pershing, Hitler, the F.B.I., our supervisor, his secretary, her boy friend, and to our various departments.

Sixteen copies are filed in various files scattered in our offices. The purpose of this is obvious. Suppose you want to find a copy of an old order. Instead of having to ask for it or to determine which file it is in, you just run around in circles. The first file you fall over, just pull open a drawer and there it is.

Forty-one copies of the purchase order go to a small group of men known as coordinators. Those are the furtive looking fellows who occasionally sneak in and out of the office. The head coordinator has a very interesting job. Using a large map and a bunch of pins, he plays a game called "Coordination." By sticking pins in various places on the map, he knows just where every coordi-

nator is located right now. As long as he does this successfully, he wins, but whenever he loses a pin or a coordinator, he loses that rubber.

As soon as the coordinators get wind that a new purchase order has been placed and issued, they fly into action. The unfortunate vendor who received the order now becomes the subject of guile, persuasion, threats, intimidation, and general harrassment in an attempt to get his signature on a paper known as a delivery schedule. God help the vendor who signs that paper. From then on, at every turn, he will be confronted by coordinators demanding "Where are those nuts?"

Months go by, but in the meantime someone at the tail section finds two nuts that fit the tail gadget. Without authorization of the surplus parts department, he applies the nuts that fit the tail gadget and finishes the plane. The plane is pushed out of the factory onto the field, disassembled, crated, uncrated, boxed and shipped to British South Africa where it is now on the dock waiting for an American Engineer to show the natives how to put the damned thing together.

So what do we do? We cancel our order for two nuts! Now to issue a cancellation, you . . . Oh hell! What's the use. If the author of this gets fired, I didn't do it. Buy some more bonds. We need the dough.

WAR PLANTS

NEED

THIS



TEMPRITE X-RAY REFRIGERATING UNIT!

IN MANY of our war industries, industrial X-Ray machines are becoming a vital part of their production lines. These machines are used to take thousands of X-Ray photographs of various materials and parts in search for defects that might cause serious failures when our men's lives depend upon the proper operation of our war equipment.

This ever increasing use of the X-Ray as an infallible inspector in our war industry requires an exact precision-like operation of the X-Ray equipment during every working minute.

To take X-Ray film photographs on a production basis it is necessary that all factors contributing to the quality of the prints be controlled within extremely accurate limits. These main factors are: (1) IMMERSION TIME, (2) SOLUTION STRENGTH, (3) SOLUTION TEMPERATURE.

The first two factors are entirely in the hands of the X-Ray equipment operator and can be controlled to an exact point; however, the third, SOLUTION TEMPERATURE, varies with conditions surrounding the equipment and may change from day to day and, in fact, from hour to hour, thus rendering the control of the first two factors practically useless, and resulting in unsatisfactory prints.

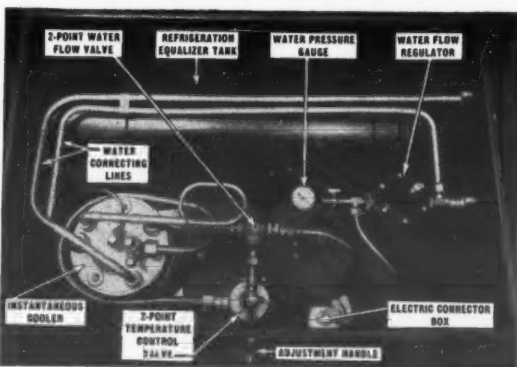
It is here that the Temprite X-Ray Refrigerating Unit plays such an important part in the industrial X-Ray field.

With the Temprite Model 555-PD Refrigerating Unit, large quantities of controlled temperature water can be circulated around the processing solution containers placed in the developing tank, thus insuring definite control of the processing solution temperatures at all times. At the same time a large volume of clean controlled temperature water for washing the film or plates is always available because the water used is not recirculated but goes direct to the drain carrying with it all of the used solution from the film surface.

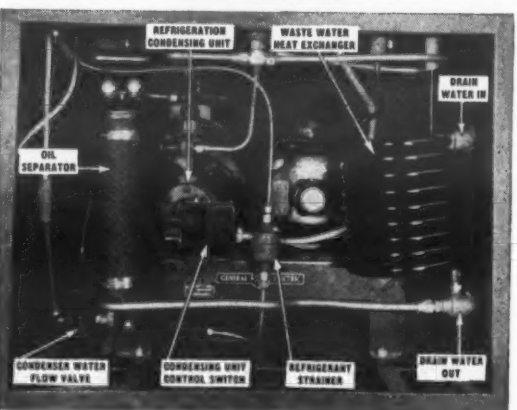
DEALERS: HERE'S HOW TO SELL IT!

If you are among those dealers who have not had the occasion to contact war plants and are unfamiliar with priority requirements, the Temprite Products Corporation will be pleased to send you all the information necessary in making a sale of this kind. Simply address your letter to our Sales Department and it will be sent immediately.

★ Don't forget to write today for detailed description of this new Temprite X-Ray Refrigerating Unit. ★



Inside Top View



Inside Machine Compartment

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous

Liquid Cooling Devices

43 PIQUETTE AVENUE

DETROIT, MICHIGAN

The Priorities Quiz

(AIR CONDITIONING & REFRIGERATION NEWS, with the aid of a man who is actually engaged in handling much priorities work, will attempt to answer questions from readers about priorities problems. The editors will not guarantee to answer all questions, nor can they guarantee that the answers will be legally perfect, but an effort will be made to provide a guide to correct procedure wherever possible.)

Can Copper Tubing Be Held Out of Excess Stocks

Q. Is it permissible to keep a small stock of dehydrated copper tubing for emergency service repairs permissible under P-126 when turning in excess stock to the War Production Board, Recovery Corp. For example, would it be possible to keep 500 feet of a 5,000 foot inventory for emergency service and turn in the balance to the Recovery Corp.?

A. It is assumed that you have reference to the filing of Forms WPB 843-a, b, and c which were distributed by the Inventory and Requisitioning Branch of the WPB. The Copper Recovery Corp. was set up as an agent for the Metals Reserve Co. to carry out arrangements for the purchase and disposal of copper and copper base alloy products which holders voluntarily agreed to sell to the Government.

In reporting your inventories on these forms you must report strictly in accordance with instructions. Assuming that you are a distributor, you must report as idle and excess inventory all copper tubing in excess of the quantity of your sales of tubing during the past six months. You

may, however, state on these forms whether you agree or do not agree to sell this material voluntarily. If you do not agree to sell voluntarily, the Government may requisition the material if it proves to be an excessive inventory.

In determining whether your inventory is excessive, consideration will be given to the fact that use is permitted under P-126 and that an emergency service inventory is permissible which, under P-126, is defined as, "the minimum inventory of material required to supply current demands for emergency service not to exceed the maximum quantity on hand for that purpose" on the date of your 1941 physical inventory.

If the 500 feet you wish to keep for emergency service is not in excess of the quantity sold for that purpose during the previous six months, it isn't considered idle or excessive inventory by the Copper Recovery Branch and need not be reported or offered for sale to the Government. In other words, you must report as much of the 5,000 feet you have on hand as exceeds the quantity sold in the previous six months. Even though reported, however, you need not agree to sell it voluntarily even though by doing so you raise the question of

whether the Government will requisition it from you, and you may continue to use this material (though reported) for authorized purposes.

As you reduce whatever quantity you report, however, you must notify the Copper Recovery Branch to change their records accordingly. In the event that the quantity you wish to keep on hand exceeds the definition of emergency service inventory or the definition of idle and excessive inventories as published by the Copper Recovery Branch, both of which are quoted above, it is advisable for you to take the matter up with the Refrigeration and Air Conditioning Section of the General Industrial Equipment Division of the WPB at once, and if your request is a reasonable one, undoubtedly some relief will be granted you.

Copper and Brass Parts Under Revised M-9-c

Q. I saw an announcement recently that under the revised Copper Order I could no longer buy parts made of copper or brass except on an AA-4 or better rating. Does this mean that we will no longer be able to secure repair parts made of copper or brass on our P-126 ratings?

A. There has been some general misunderstanding regarding the effect of the recent revision to M-9-c, the Copper Conservation Order. The WPB has attempted to direct the flow of copper materials into the most vital channels by revising M-9-c periodically.

To prevent unlimited use of large inventories, a restriction was incorporated in the revised M-9-c as to

the use of materials which were in manufacturers' inventories on or before June 30, 1942. The AA-4 restriction you mentioned above has reference to such inventory only.

That is, if in manufacturing parts from copper materials a manufacturer uses inventory which he had acquired on or before June 30, 1942, he cannot sell it except on a rating of AA-4 or higher without special permission from the WPB. There is no such restriction on manufacturing from material received after June 30, it being the assumption of the WPB that any material received after that date was allocated for specific purposes and will be properly consumed.

Therefore, the only time a manufacturer should require of you an AA-4 or higher preference rating, because of the effect of M-9-c, is where he has manufactured it from material received before June 30, 1942. It isn't necessarily true that you will be unable to buy parts made of copper or brass on your P-126 ratings because of M-9-c. There is also incorporated in the revised M-9-c a repair clause which removes the restrictions of M-9-c from any manufacturing of repair parts to make a specific repair of a used article. In appropriate cases, this section will actually assist you in securing copper and brass repair parts on the preference ratings available to you.

Producers Should Have CMP Forms by Now

Q. I have heard nothing from our industry branch of the WPB regarding applications under the CMP for second quarter material. Are there any steps that I should be taking to protect myself to be sure that I will not be left out when allotments are made?

A. Yes. Applications for both A and B products have been distributed and you should have received your "applications for allotments" by this time. It is suggested that you contact your Industry Branch of the WPB at once and advise them that no forms have been received. They will, undoubtedly, forward them to you promptly.

The applications for controlled materials to produce A products (Form CMP4-A) are due not later than Jan. 30 and the applications for controlled materials to produce B products (Form CMP4-B) are due in Washington not later than Feb. 9. The WPB is asking that these dates be met as specified to prevent any delay in the allotment of materials.

Meanwhile, you can prepare the required information in advance of the receipt of forms. The form calls for (1) your anticipated production schedule by month for a 12-months' period starting April, 1943; (2) the total quantity of each controlled material required month by month to meet that schedule; (3) the value of your shipments for the fourth quarter of 1942 broken down by preference rating and end use and; (4) the value of orders on hand for shipment in the second quarter, 1943 broken down by preference rating and end use.

Q. What are the additional inventory restrictions under the CMP?

A. CMP regulation No. 2 just issued restricts manufacturers' inventories of controlled materials to a 60-day supply (forward requirements). A manufacturer may not accept any controlled materials which will result in an increased inventory greater than that 60-day supply except (1) where the producer of controlled materials makes delivery prior to the date the manufacturer specifies on his order and then only to the extent of such prior delivery or (2) where a postponement or cancelled order has already been loaded for shipment or; (3) where to conform with the limits a manufacturer must postpone delivery of a special controlled material item which the producer cannot readily sell to someone else. A schedule of minimum quantities has also been set up in CMP Regulation No. 2 and a manufacturer may accept deliveries of controlled material in excess of the 60-day limit where to conform to limitation would force him to accept a quantity less than the minimum shown in the schedule.

Q. I have seen official statements indicating that the WPB requires by Jan. 31, 1943, a report of inventory of controlled materials held by each manufacturer on Dec. 31, 1942. How is this to be reported? Will forms be supplied by the WPB?

A. The CMP inventory reports for fourth quarter, 1942, have not been eliminated. The new CMP inventory

regulation just issued now states that inventory reports shall be filed "as required from time to time," no definite date having been set. Meanwhile, your PRP inventory controls will continue until some further announcement is made. The WPB in discussing this point has stated that some announcement may be expected shortly giving definite dates when inventories will be required.

Correction on the Special Emergency Service Form

Frigidaire Division
General Motors Corp.
Dayton, Ohio

Editor:

The No. 1 "Question and Answer" in your "Priorities Quiz" column in the Dec. 21 issue stated that higher preference ratings could be obtained for emergency assistance by using Form PD-33-a.

The writer has secured a copy of PD-33-a, and finds that it is a "Producers' Report of Stocks and Production" on synthetic rubber.

No doubt this is a printing error, and we are wondering just what form you were referring to in this article.

Your comments will be appreciated.

R. V. Leslie,
Field Contact & Technical
Division, Service Dept.

Answer: It was a typographical error. The correct form is PD-333-a.

Producers Required To Meet Deadlines To Get Allotments

WASHINGTON, D. C.—Only those manufacturers who meet the time schedule of the Controlled Materials Plan in their return of the application blanks (CMP-4A and CMP-4B), mailed them last week, will benefit by direct allotments of controlled materials during the second quarter of this year, it is pointed out by Harold Boeschstein, Director of the CMP Division of WPB.

"While no war producer need fear that he will find himself without supplies adequate to meet his contracts, those who qualify under CMP will enjoy the advantage of allotment numbers in obtaining the three controlled materials—aluminum, copper and steel—and all other products necessary to complete their authorized schedules," he said.

"As orders bearing allotment numbers will take precedence over those bearing preference ratings only, it is obviously to the interest of every producer who can possibly do so to have his applications on file with the proper Claimant Agency or WPB Industry Division by Feb. 9, the date specified by the Director General for Operations.

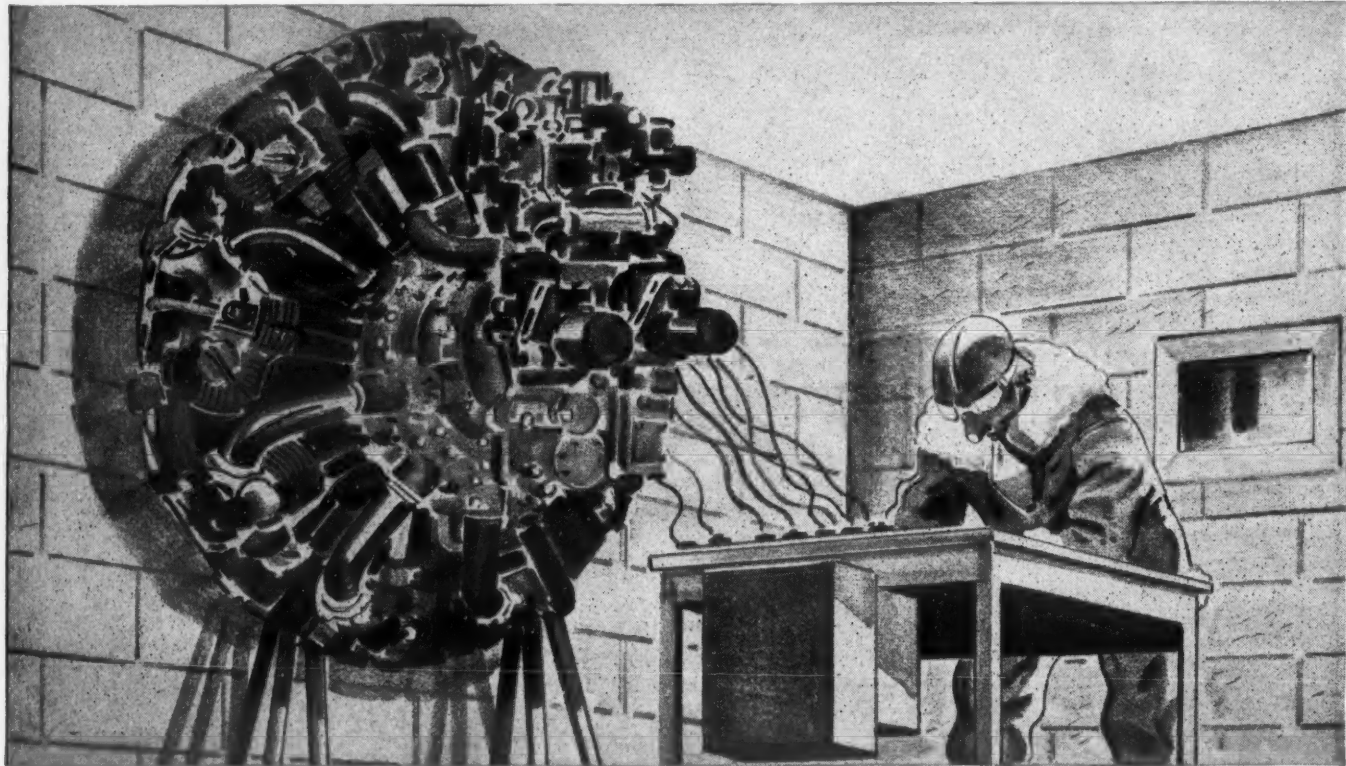
"Prime manufacturers of Class A products, who will receive their allotments of controlled materials direct from Claimant Agencies, and will divide these between their own needs and the requirements of their various sub-contractors supplying them with components also classed as A products, should urge their secondaries to furnish them with the necessary information not later than Jan. 30, in order to permit time to incorporate it in the single application to be filed with the appropriate Claimant Agency by Feb. 9.

"Manufacturers of Class B products, who will receive their allotments from WPB industry divisions, should file their applications with the War Production Board on or before the same date."

The official Class B Product List, issued Dec. 21, names some 500 groups of related articles. Only items appearing on this list are B products. All others containing controlled materials are, by definition, A products.

A manufacturer who is in doubt as to the class into which a product falls, should immediately write or wire to the Controlled Materials Division, War Production Board, Washington, D. C., giving a full description of the article in question.

Through the transition period from the Production Requirements Plan to the Controlled Materials Plan, that is, during the second quarter of 1943, PRP authorizations will be extended to provide a means whereby manufacturers who do not qualify within the time limit under the Controlled Materials Plan may obtain required materials.



ARCTIC WINTER—made to order

TODAY ☆ ☆ ☆ ☆ ☆ ☆ ☆

In mechanically refrigerated sub-zero test rooms, men in electrically heated clothing are constantly testing the performance of airplane engines, trucks, etc., to make sure that they will keep going at 40, 50 or 60 degrees below zero.

Results may be seen in the splendid performance of our tanks and trucks in arctic winter; of our planes in the extreme cold of high altitude flying.

This is but one way in which the refrigeration industry helps to keep the war machine rolling.

TOMORROW

Sub-zero testing will be used more and more to produce better automobiles, trucks, busses and airplanes, that are truly "all weather".

Gone will be that cold-morning reluctance or obstinacy of your car. Gone will be the transportation tie-ups from busses which suffer from cold. Gone will be late deliveries and tied-up schedules caused by frost-bitten trucks. They'll be conditioned to winter. Data on low temperature operation being accumulated now will be added to data obtained tomorrow, for the guidance of design engineers.

Detroit Expansion Valves and "DL" Controls are playing a vital role in this all important work and will continue to do so as the industry develops new and better uses for refrigeration.

DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN



Canadian Representatives — Railway and Engineering Specialties Limited, Montreal, Toronto, Winnipeg

Household Refrigerator Producers Use 'Parts Exchange' Programs

Some Plans Have Been In Effect Many Months; Importance To Metals Salvage Is Emphasized

DETROIT.—Recent announcement of the plans of the Household Refrigeration Section of Nema for a special drive to speed up the salvage of old parts does not mean that this kind of a program has been neglected by the individual manufacturer of household electric refrigerators.

In fact, most of the producers of household units have had comprehensive salvage or "exchange" programs on parts for refrigerators and other appliances in effect for quite some time.

POLICY OF ONE FIRM

One company's policy on the matter of salvaging parts is stated something along the following lines:

"It is imperative that every part, which can be repaired, be returned to the factory, so that it can be used again.

"On the effective date, shipments of the parts listed will be on an exchange basis only. In other words, we will ship any of the following parts only after we have received a similar part:

"(Relays for sealed units, high side floats, low side floats, seals, valve plates, connecting rods, crankshafts, condensers, water valves, pistons, power elements, cooling tanks and units, compressors or compressor bodies, beverage cooler lowside, refrigerant containers, oil separators, water cooler lowside, cabinet hardware.)

"Unless the following parts are sold for new installations, they must be sold on the same basis as the parts listed above: (solenoid valves, expansion valves, controls, thermostats, service valves, driers, refrigerant gauges).

"The handling procedure for all of the parts listed will be the same as has been in effect for flat rate exchange parts. If the part returned can be repaired, the cost of the replacement part will be as shown . . . in the catalog. If the parts cannot be repaired, a new part will be supplied and charged for at the current new price.

"The following parts are generally not repairable, so consideration should be given to this fact when making charges to your customer: cast iron connecting rods (without bushings), crankshaft (with badly worn bearing surfaces), pistons (no ring type) that are badly scored or worn undersize.

"Although the above parts may not always be repairable, they must be returned to the factory in order to secure a useful part.

"Every possible effort should be made to secure the used part, so that it can be repaired because only in this way can the existing supply of parts be made to last through the war period. If this plan is followed, we should be able to supply the demand for repair parts."

SECOND STATEMENT

Another manufacturer of major appliances has issued a statement giving the "whys" of the return part program as follows:

"Many service men ask, 'Why do you want all small parts returned to the factory?'

"They understand about a part like an aluminum washer agitator containing a large amount of critical material; but small parts don't have much metal in them. Why should they be returned?

"A range thermostat is a small part which illustrates some of the complications in the use of critical materials in renewal parts. The shaft is of stainless steel and the sleeve surrounding the shaft is of monel metal. Today neither of these metals is available for such use.

"Strange as it may seem, these two parts are not the ones that burn out. When a thermostat fails, it usually fails at the contacts, and the shaft and sleeve are just as good as they were the day they left the factory. You return the thermostat, the shaft and the sleeve are salvaged and a new thermostat can be built.

"Today you may not have to return a part to your distributor in order to get one to replace it, but the day may not be far distant when every renewal part will have to be returned before you can get another.

"Many parts you send in can be reoperated at the factory. At times a piece of assembly you return can be added to another assembly to make a new renewal part available. Thus, every part of a part counts.

"Some dealers feel that the few parts they have are not important. That is wrong. Every part is important, no matter how small. So save every part. Return them to your distributor, and he will return them to the factory. There, they will be used to increase the stock of renewal parts available for future repairs."

Up-to-Date Records Enable Dealer to Show Profit on Service Business

PHILADELPHIA.—By following a weekly schedule, Frank S. Presber, owner of the Gabel Electric Shop here, has changed "repair work" from a pre-war sideline into his top source of income, with profits still rising.

"I find that by keeping track of my repair business weekly, instead of on more distant periods," he explains, "I can more easily adjust my business to take care of all the repair work that comes in." He bases his schedule on a system of weekly surveys and a weekly advertising plan.

The surveys made each week by Mr. Presber assist him in six ways. They, first, indicate the number of appliances to expect in for repairs during the coming week; second, show the approximate number of different appliances to be repaired; third, determine the approximate number of workman hours to be used; fourth, tell him how much business to expect; fifth, allow him to calculate the amount of cash returns for the following week; and sixth, enable him to order replacement parts weeks in advance.

Mr. Presber uses three sources of information for his surveys. The first is a record of the immediate job tickets that were attached to items repaired during the previous week. Second source is receipt of return post cards which the Gabel store sends out with advertisements. The third is questions asked customers

concerning the kind of electrical appliances they have at home that immediately are, or soon will be, in need of repairs.

Results of the surveys are recorded on a weekly chart where Mr. Presber may analyze them quickly and prepare his work for the following week. By comparing the charts periodically, he knows what repair parts to order; what appliances to plug first in advertising; and the final tabulation of his repair business.

About his advertising plan, Mr. Presber states, "We push all our business by weekly mailing circulars and also by newspaper advertising. In the circulars we list weekly repair and recondition specials which include about 10 mechanical operations for a set price. We list about three appliances that we will repair at this special price, and to the circular we have attached a mail-free printed post card, so that all a customer has to do is check the items she is interested in having repaired, and mail the card."

"Newspaper advertising," he continues, "has been cut so as to take up only a few inches of one column space, and advertises the same repair specials as have been mailed out."

Mr. Presber believes that the results of his surveys show that a dealer can profit well by clearing his shop for repair service, that repair work will sustain him until merchandise is released for sale.

Civilian Steel Use Is Set at 1,500,000 Tons

ROCHESTER, N. Y.—About 1,500,000 tons of steel—just 7½% of the amount used in 1940—will be consumed by civilian production this year according to present estimates, William L. Batt, vice chairman of War Production Board states.

Of that tonnage, largest individual portion will be 774,000 tons for manufacture of tin cans, he explained.

"This represents quite a drop from the 1942 figure of 1,800,000 tons for tin cans," Mr. Batt said. For all civilian production last year, amount of steel consumed dropped from 1940's top mark of 20,000,000 tons to about 6,000,000 tons.

Of the 20,000,000 tons used in 1940, Mr. Batt pointed out that 12,000,000 were used by the automobile industry; 3,000,000 consumed by durable goods; 2,700,000 used for residential construction; and 1,700,000 went into tin cans.

Sidelines Take Over Entire Appliance Dept.

MINNEAPOLIS — Motor Power Equipment Co., Crosley distributor here, has converted the former major appliance department entirely to sideline merchandise, according to F. M. Hutchinson, department head. Stock now includes furniture, pull up chairs, children's furniture, unpainted furniture, five lines of children's educational toys, home laundry driers, and basement laundry furniture.

It's Time to Tell About Refrigeration's "Hidden Services"



Mrs. Housewife, as she eyes the diminishing variety of meats in her butcher's Display case, has her first introduction to vast service Refrigeration offers to this important part of her daily menu. Yet the Refrigerated Display Case and "Walk-in" box, so familiar to shoppers, is but the final phase of Refrigeration's long list of "Hidden Services."

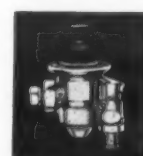
Long before your wife picks out your favorite "cut" at her market, Refrigeration was on the job. In great packing plants, men, warmly dressed for sub-zero temperatures, move about in huge storage rooms, preparing prize meat for shipment to market. Refrigeration's "Hidden Services" start here.



Then, by rail and highway, this meat moves out to your community . . . Travelling hundreds of miles through all kinds of weather, hot or cold, it arrives

temptingly fresh only because of the carefully engineered and controlled Refrigeration in modern railroad cars and motor trucks.

A-P DEPENDABLE REFRIGERANT VALVES are vital to every "Hidden Service" of modern Meat Refrigeration—in storage, processing, transportation and display. Quietly, efficiently, accurately, they operate day after day, month after month, to keep hard working Refrigeration Units running smoothly, with a minimum of attention, to serve the wartime food-protection needs of the Nation.



Model 204



Model 205



Model 215

AUTOMATIC PRODUCTS COMPANY
2450 NORTH THIRTY-SECOND STREET
MILWAUKEE WISCONSIN
Export Department
100 Varick Street . . New York City

A-P DEPENDABLE
Refrigerant Valves

Fish & Fowl Cases 'Hot' Now For Meat Market 'Substitution Sales'

BIRMINGHAM, Ala.—A selling point designed to help refrigeration dealers merchandise new or used fish and poultry cases from their stock is offered by George D. Maske of Maske & Kent Refrigeration Co. here.

His idea hinges on increased poultry and fish "substitution sales" brought about today by voluntary restriction and approaching government limitation on meat consumption.

Demands for bacon, pork chops, and beef products so exceed supply at present, Mr. Maske contends, that most markets can sell such cuts without the added appeal of pleasing presentation. Contrarily, he points out, purchase from the more plentiful amounts of fish and fowl can be

suggested to the customer by attractive arrangement of the foods in suitable display cases.

To conclude his reasoning, Mr. Maske argues that sale of poultry and fish equipment simultaneously serves to remove pressure from the butcher's reduced meat supply and to remove show-cabinets from the dealer's inventory.

Interpretation Is Given For Unrestricted Use Of Chrome Steel

WASHINGTON, D. C.—What constitutes proper authorization for unrestricted use and delivery of corrosion- and heat-resistant chrome steel is explained here in Interpretation 3 to Supplementary Order M-21-d "Steel."

M-21-d places certain restrictions on use and delivery of such steel except in cases where specific authorization or direction has been given by the Director General for Operations.

For purposes of this order, provides the interpretation, approval of an order for melting or delivery on forms PD-391 or PD-707 constitutes the required authorization or direction.

It is explained that therefore an order for chrome steel rated lower than AA-5 can be melted, processed, and shipped if it has been approved on forms PD-391 or PD-707, and the purchaser can use such steel in his own operations and processes or complete fabrication of articles from such steel and ship to his customers.

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Electric
WATER COOLERS
ALL SIZES FOR
SHIPBOARD AND LAND USE
MEET GOVT. SPECS.

CORDLEY & HAYES, NEW YORK, N. Y.

Air Conditioning & REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office;
Established 1926 and registered as
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F. M. COCKRELL, Founder

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Refrigeration Will Help Win the War

Post-War Thinking Now Can Help Win the War

PEOPLE who say we must not think of postwar problems now, but rather concentrate on winning the war, ignore the effect of morale on winning the war. The morale of our fighting men, and the morale of the workers on the home front are the factors which will determine whether or not we win the war, now that our production goals are being attained.

In a way the don't-plan-now people are as difficult to answer as those who say nobody in Washington should be criticized "because there's a war on" and if you criticize you are harming the war effort. But—

There's an obvious answer to both arguments—the winning of this war depends on the hard work of millions upon millions of men and women. If they don't believe that their leaders are making the right moves, they may not work or fight so hard. And, if they feel that after the war all will be chaos, they won't hurry to end the war.

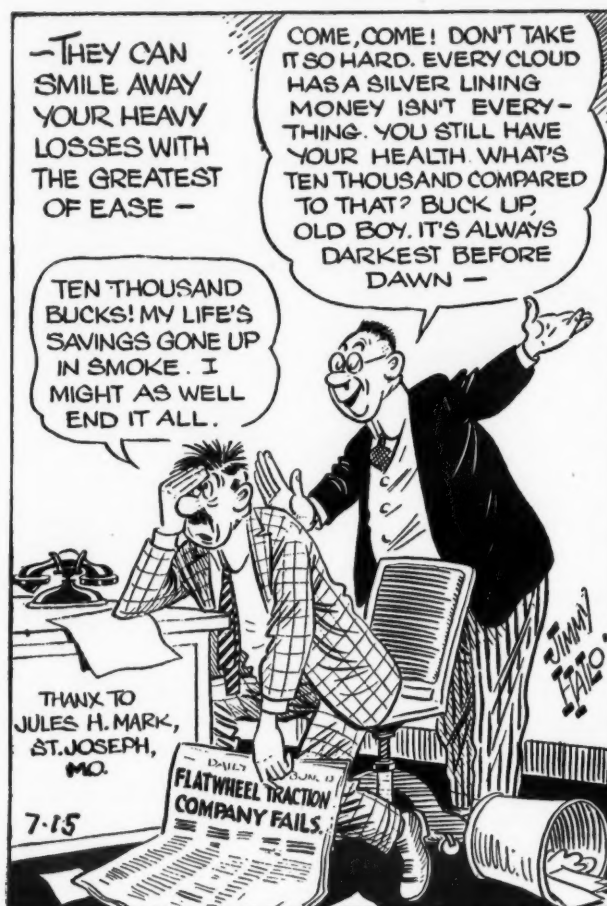
THE FUTURE IS QUESTIONED BY WAR WORKERS AND SERVICE MEN

Here in Detroit we rub elbows with a city of war workers. They are making good money, living better than they ever did before, have a sense of accomplishing something of a patriotic nature. But they all have one big worry: "What's going to become of us when the factories stop making guns and tanks and planes?"

And, here at the NEWS, we are in contact with a lot of soldiers and sailors. The bulk of our own staff is in uniform. We correspond with them regularly. We also correspond with a

They'll Do It Every Time

By
Jimmy
Hatlo



number of former subscribers who are in the various services. They all seem primarily concerned with one thing:

"Will there be a place waiting for me when I get back? What kind of a place? What are you doing to preserve the industry we left, and to keep it healthy so as to provide a postwar opportunity for me?"

The fact that our soldiers have a lot of time to talk about things like postwar opportunities may surprise some, because we are inclined to think of soldiers fighting about 24 hours a day. The fact of the matter is that only a comparative few are engaged in the hells of Guadalcanal, New Guinea, or Tunisia. Actually, most of them are sitting around on their hands—garrisoning lonely outposts, awaiting assignment, awaiting shipping space.

AMERICAN BRAINS CAN PLAN THE PEACE WHILE WINNING WAR

And as they sit, they chew the fat. What they talk about, they reveal in their letters home, is "after the war."

The too-generally-accepted philosophy of defeatism concerning after-the-war problems worries them sick. So does the evidence that too little thinking is being applied to postwar problems.

There is no doubt that a great many of the country's leading executives and best minds are so completely occupied with war work that they could not possibly spend any time whatsoever to consider the postwar situation.

We should be grateful that they are so wholeheartedly devoted to the country's major task. BUT... nobody will think ill of those who do have time to plan ways and means of re-employing our soldiers and sailors and marines when they return to the country which they have saved from totalitarian aggression.

America's reservoir of brains is surely big enough to win the war and plan for the peace at the same time. If it isn't, God help us.

MANY FIRMS PLANNING NOW ON POST-WAR PRODUCTION

Fortunately for our side, there is evidence that some firms are making plans for re-entering the civilian market in a big way when their market for apparatus of destruction no longer exists.

The trouble is, too many of them are bashful about announcing that fact. They seem to fear that the public will believe they aren't devoting sufficient energies to getting out war materiel if it becomes known that they are conducting both engineering and marketing research in preparation for the better days to come.

Actually—outside of the "lunatic fringe" of crackpots who are ready to raise Cain if you shave regularly on the grounds that you are using up steel in your razor blades—both the civilian public and the military would praise any firm that indicated it was studying the problem of giving work to people after the war.

We are convinced that nothing will so invigorate our fighting men now, and encourage them to kill a lot of Japs and Nazis in a hurry, as hearing that "everything is hunky-dory" relative to postwar industry.

And the same thing goes for labor. As matters stand now, too many workers believe that if they speed up their war production they are just hurrying themselves out of the best jobs they ever had.

LETTERS

REPORT FROM ENGLAND

The British Electrical Development Assn., Inc.
2 Savoy Hill, London, W.C. 2

Editor:

Your recent letter is acknowledged and appreciated, and under the circumstances I think perhaps you might like to record some of the activities of this Association.

The British Electrical Development Assn., Inc. familiarly known as E.D.A. both in this country and amongst our many friends in the U.S., is an organization which serves the interests of the electrical utilities in Great Britain. Its membership includes the very large majority of both Municipal and Company Electricity Undertakings in this country, together with the Central Electricity Board and a fair proportion of the electrical utilities in the British Empire.

In peace time E.D.A. spends a good deal of its revenue on national advertising and has in past sponsored several large campaigns, all designed to promote the use of electricity and electrical appliances.

A few examples may be of interest. In 1935 probably one of the biggest efforts to obtain new connections ever made in this country was mounted. With the inspiring title of "Million New Consumers Campaign" it set out to secure a million new domestic consumers in the space of 12 months or so. Within the year 850,000 homes were connected and the million mark was passed before the end of 1936.

Electric Refrigeration was promoted by a big cooperative publicity effort, by national advertising and other means in both 1937 and 1938 in which leading refrigerator manufac-

turers took part. Since then electric cooking and water heating campaigns have also been featured with excellent results.

E.D.A. had the reputation in pre-war days of being one of the biggest organizers of Exhibitions in the Eastern Hemisphere and it was usually given the task of handling the electrical section of every important Exhibition or Fair held in Britain. It also took considerable space in every farming and livestock show, a feature of Agricultural Britain in peace time, in which electricity in the farm was actively promoted.

Film advertising has also been increasingly used by E.D.A. for putting over the story of electricity in the home and farm, and since the war commenced has cooperated with the Government Departments in educating the public in such subjects as food conservation and so on, the main theme being the welfare of the people with electricity being kept more or less in the background. The prestige value of such films is, of course, considerable.

Another activity developed extensively in the past 10 years has been in the direction of technical advisory service. This is extended, naturally, to every member of E.D.A. but more particularly to Architects and to the public generally who may be in need of unbiased advice on the use of electricity in the home, offices, or factory.

Since the war, of course, most of the publicity and development side of E.D.A.'s work has had to be shelved for happier times to come. It has not been idle, however, as new problems arising from the stirring times in which we live, have called for fresh effort and endeavor in order to help the war effort by every means in its power. Some examples of these may interest you.

First the blackout. E.D.A. was in battledress so to speak from September, 1939, onwards and the public were shown how to conform to the regulations without sacrificing interior comfort. Ways of blacking out, the construction of light traps for shop entrances and materials to use were indicated and were given full publicity by the entire Press of Food in setting up Food Advice Centers in practically every important electrical utility showroom in the country.

In the winter of 1940-41 when thousands of people in our large cities were subjected to almost nightly bombardment from the air; electric heating was rapidly installed in many public shelters. E.D.A.'s research indicated the best methods to use. The growth of communal feeding has brought into use a large number of factory canteens and restaurants which are municipally owned and operated. Thanks to E.D.A.'s representations most of these are equipped with a good proportion of heavy electrical appliances such as ranges, hot closets, ovens, etc. At the present moment electrical development is very much "in reverse" as the national need is to save fuel. This is being encouraged by all the utilities.

E.D.A. is now turning to the future and has been playing a large part in the preparation of plans for reconstruction which has been undertaken by the Ministry of Works and Planning. E.D.A. has staked a claim for the electrical industry in the great work of reconstruction and rebuilding Britain in order that electricity may be used in the most efficient way possible.

Alex. C. Cramb, Director and Sec'y.

VITAL INTEREST

Somerset Refrigeration Service
7 High St., Somerville, Mass.

Editor:

We have found the News of vital interest and helpful in keeping up with changing conditions.

Anthony Erbetta.

Congressional Committee Asks Action On 5-Point Plan To Aid Small Plants

Fear Expressed That Small Enterprise Faces 'Wiping Out'

WASHINGTON, D. C.—Five steps for Congress to take to assist small business in receiving war contracts have been suggested here to the Senate in a report from its Committee on Small Business.

According to Committee Chairman Senator Murray of Montana, four other legislative plans also are being considered by his group in an effort to relieve the small business man "during this abnormal period" and at the same time to reduce problems of manpower, housing, and transportation that accompany concentration of war contracts in the hands of a few large corporations, and to avoid production bottlenecks. Specifically, the committee suggested that Congress give attention to activities of the Smaller War Plants Corp. and the federal procurement agencies with a view to:

1. Better distribution of war contracts.
2. Speedier subcontracting to smaller firms.
3. Utilization of smaller plants where acute labor shortages exist.
4. Protection of smaller plants under the Controlled Materials Plan.
5. Coordination of conflicting practices and policies of various procurement agencies.

The other four legislative actions under consideration of the committee concern:

1. Establishment of a War Minerals Director to coordinate production and distribution of critical minerals and speed their flow to smaller plants. Mr. Murray claimed that one of the biggest obstacles to increased use of smaller plants was shortage of steel, copper, aluminum, and other basic metals whose domestic development, charges Secretary Ickes, is being largely overlooked by WPB.
2. Creation of a Civilian Supply Administrator within WPB to end a "chaotic" civilian supply picture. Mr. Murray contends that it has been impossible to determine the amount of labor materials needed to produce essential goods and services since the essential civilian requirements have not yet been determined.
3. Relief for small business from certain financial problems such as

those caused by freezing of stocks and inability to meet payments on leases and mortgages entered into before the war and broader financial aid especially with a view to lower interest on short-term loans.

4. Defining of responsibilities of all major agencies engaged in prosecuting the war with attention to bringing people closer to the government.

"Small business, especially," stated Senator Murray, "through its various organizations and through local and national advisory committees to federal agencies, should be given full opportunity to assist in the planning and administration of public policy."

The Senator labeled as "a grim paradox" the existence of idle plants and idle machines at a time when the survival of America and the United Nations depends so much on speedier production of war materials. "Subcontracting has proceeded at a snail's pace," he asserted, adding that 70% of all prime contracts were still in the hands of 100 large companies which enjoyed only a small percent of total peacetime production.

Mr. Murray further contended that the fundamental question of whether or not the American system of free enterprise will be restored and sustained rests on the solution of problems of the little business man.

"The basis of free competitive enterprise has been practically suspended by the exigencies of war," he asserted. "The trend toward the expansion of big concerns and to the wiping out of smaller ones has been renewed with greater impetus than ever before."

Coincidentally with the committee's report to the Senate, War Production Board announced that during the past two months, more than \$1 billion in contracts had been placed with companies employing from five to 500 workers.

This development was called "simply the forerunner to an even greater distribution of war contracts among distressed plants" by Lou E. Holland, deputy director of WPB and chairman of the Smaller War Plants Corp., criticized by the Murray committee for "unsatisfactory" progress in the desired direction.

Low-Cost Air Conditioning Seen As Factor In Postwar Housing Boom

NEW YORK CITY—Introduction of low-cost air conditioning units for low-cost homes may be expected after the war, it was declared by Leslie M. Cassidy, vice president and general manager of the building materials department, Johns-Manville Co., in addressing the National Retail Dry Goods Association during its 32nd annual convention which concluded here Jan. 15.

After predicting that adequate insulation will be "a must" in the house of tomorrow, and that there will otherwise be a general demand for materials assuring lowest possible maintenance costs, Cassidy said: "Coupled with home insulation we can expect to see low cost air conditioning units available for low cost housing."

The speaker forecast a housing boom in which two or three times as many homes will be built in the postwar decade as during the 1930's, bringing widespread employment and favorable conditions for the entire national economy.

Particularly emphasizing the stimulation which such a boom will give the sale of appliances, home furnishings and similar items, Cassidy suggested that retailers pay greater attention to home building potentialities. He proposed that retail department stores establish home building and home improvement bureaus.

Noting that long before the present war started there was a potential backlog of needed new homes in the country, Cassidy said:

"Our recent census shows that whatever overbuilding we had in the 1920's was consumed in the depression, and our lack of building during the 1930's left us with a serious shortage. Despite the pick-up of home construction that started in 1937, prior to the war we did not have a single year since 1929 that was equal to the home construction in that year."

In addition, Cassidy, continued, with new home building stopped for the duration of the war, we are still suffering our normal loss of housing—thousands of home each year that are lost as a result of fire and obsolescence.

The speaker further cited a "significant change" in population which is going to favorably affect the home building market. While the rate of growth of our total population has declined, he explained, the number of people in "the important age group of 24 to 44 is still growing faster than at any time in our history and will continue to do so until about 1950, when the increase in that age group will begin to slow down, but it will not actually decline in numbers until about 1955, or fully 12 years hence."

The great majority of postwar housing will be in the low-cost field, with an average valuation of less than \$5,000, Cassidy predicted. With further improvements that can be expected, he added, good single family houses are going to be available in the \$3,500 to \$4,000 range.

In addition, he said, there will be lower maintenance costs.

As to prefabrication, he said: "From results to date it is seriously questioned whether prefabricated houses, that is, houses built completely in factories, will form a big part of our future housing. Partial prefabrication, however, at the job site where homes in great numbers are to be built at one location will probably be rather common in the industry."

Hotel Porter Handles Details of 'Share-Ride' Salesman's Club

GRAND RAPIDS, Mich.—A "Share-the-Ride-Club" for traveling salesmen has been developed and put into operation by the Sales Executive Club of the Grand Rapids Chamber of Commerce.

The plan works out in the following manner:

Participating salesmen register their names opposite their intended destinations on a trip schedule board in the lobby of a downtown hotel. The board lists 15 principal Michigan cities.

A driver is selected from the car-owners enrolled for each trip. Others with the same destination are assigned to him as passengers, agreeing to make their cars available for future trips.

Details are handled by a hotel porter, who gets a dollar from each participant as an initial enrollment fee and an additional 25 cents for every trip each salesman makes.

Washer and Ironer Group Makes New Type Of Plans To Capture The Future Market

CHICAGO—The American Washers & Ironers Manufacturers Assn. has approved a program for postwar planning and has empowered its president, John Wicht of General Electric Co., to name a committee to direct the new program, reports from the group's 28th annual convention held here this month reveal.

Recommendations of association executives expressed at the convention by re-elected President Wicht called members' attention to the need for making postwar plans now. To explain this need to his group, the association head touched on several factors that make up the future marketing picture.

"Sales estimations should be considered as a part of our postwar planning activities," he said. Analysis of the replacement market, the period of excess demand, and a change in family economics were also given as factors to consider. Mr. Wicht developed there points on the assumption that war economy would end by the close of 1944.

To estimate future sales, Mr. Wicht approximated that a return to normal yearly purchases of washers coupled with an abnormal accumulated demand caused by war indicated a sale of nearly three million washers during 1945 and possibly 2½ million for the two succeeding years. He went on to name special areas in which washer-demand could be created.

Urging that the industry plan to actively promote inclusion of laundry units in new homes built after the war, Mr. Wicht pointed to surveys which indicate that nearly one million houses will be constructed annually in the first five years after the war's end. He added that postwar marriages will also increase the number of new homes.

"Were we to better appreciate the

model kitchens and the opportunities they afforded we might well recognize that we can contribute substantially as an industry... to better living," he asserted.

Publicity and advertising will have an important educational job to do, the association president contended, in encouraging many of the new families to do their laundering at home. William Shaw, AWIMA publicity director who also spoke for immediate postwar planning at the convention, told of a movement underway to issue manuals of instructions on washing and ironing to various secondary schools so that the new generation of young women will learn advantages of home laundering.

Mr. Wicht further recommended informative labeling of products to provide salesmen with selling points and to give the public assurance that these points are supported by the manufacturers' statement.

About retail salesmen themselves Mr. Wicht predicted that with the advent of new and unusual contributions to consumer interest, those industries making the contributions and intelligently and actively publicizing them will attract the cream of the selling crop. He further wagered that with new designs, new materials, and even new products, specialized selling will once more be necessary.

While no manufacturer voted against the postwar planning committee several suggested it was more important to spend association time finding out how to get back into civilian business and upon what basis the government will permit individual activities. Others felt that giving such attention to postwar plans might bring criticism from sources which believe the industry should devote all of its energy to winning the war.

Achievement by those BEHIND THE LINES



The workers of Ranco have been presented the Army-Navy "E" Production Award for their "behind the lines" part in the struggle for human freedom. It reflects the high type of unity and cooperation that exists between those on the fighting front and those on the production front.

At Ranco, every worker fully realizes the grave necessity of supplying precision equipment and weapons to those who are offering their lives. Among them are husbands, brothers, sons. We will not let them down.

The "E" Emblem on our lapels is recognition of a job well begun. It will serve as a challenge to bring forth even greater achievements till victory is won.

RANCO INC.
COLUMBUS, OHIO

Refrigerant-Cooled Spot-Welding Electrodes

By Dr. F. R. Hensel, Metallurgical Consultant, P. R. Mallory & Co., Inc.; E. I. Larsen, Div. Manager, Metallurgical Engineering Dept., P. R. Mallory & Co., Inc.; E. F. Holt, Senior Research Engineer, Metallurgical Engineering Dept., P. R. Mallory. Presented at the annual meeting of American Welding Society.

(EDITOR'S NOTE: This is the second and concluding part of the study on "Refrigerant-Cooled Spot-Welding Electrodes," the original report on which was presented at the annual meeting of the American Welding Society.)

Relative Rates of Temperature Recovery In Water-Cooled and Refrigerant-Cooled Spot-Welding Electrodes

In previous tests it was noted that the temperature recovery interval following welding using refrigerant-cooled electrodes was more rapid than was the recovery using water-cooled electrodes. In order to study the advantages which refrigerant cooling of electrodes might have over conventional water cooling, it was necessary to check more closely the temperature recovery time and the effect of welding speed. Tests were made to investigate the relative time intervals necessary for the electrodes, with each type of cooling, to regain a definite temperature following a spot weld. The first series of tests was conducted using refrigerant-cooled electrodes having a normal temperature before welding of -26°C .

Welds were made at a rate of speed determined by the interval of time necessary for the electrodes to recover certain temperatures before making the next weld. All data were compiled from the temperature recording and chart speed on the Brush oscillograph.

For the refrigerant-cooled elect-

rodes three recovery temperatures were established as follows:

Test A34—Interval to recover to -20°C .

Test A33—Interval to recover to 0°C .

Test A35—Interval to recover to $+25^{\circ}\text{C}$.

Continuous recovery tests were repeated using water-cooled electrodes:

Test A36—Interval to recover to 25°C .

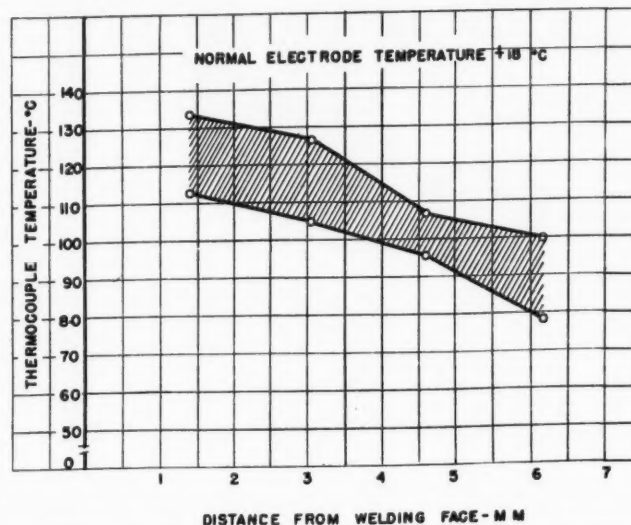
Test A37—Interval to recover to 50°C .

In table 8 are tabulated the results of the recovery rate tests derived from runs of 20 consecutive spot welds. The elapsed time intervals were averaged over the 20 welds in each test run. During these tests the next succeeding weld in any run was made immediately when the electrode had returned to a particular recovery temperature. In all tests the delay, weld and squeeze periods were standard as given in the previous Table 4.

The results indicate that in order to permit the spot-welding electrode to recover normal temperatures following a spot weld, relatively slow rates of welding are necessary.

In the case of the refrigerant-cooled electrodes having a normal temperature of -26°C , an average of 9.23 seconds was required to re-

Fig. 13—Temperature Gradient in Water-Cooled Electrodes, Test A41



Temperature Gradient in The Standard Test Electrode

To investigate the distribution of thermal effects in the standard spot-welding test electrode, temperature rise measurements were made at predetermined locations in the nose of the welding electrode during continuous welding.

Thermocouples were placed in small holes drilled in the electrode in a manner similar to that already used and the holes were drilled almost to the center axis of the electrode at varying distances from the welding face.

The thermocouple bead was located, therefore, at the center axis of the electrode. In Fig. 15 a sketch is shown of the electrode and the position of the thermocouple wells,

envelope of the maximum and minimum temperatures in both cases seems similar.

In some preliminary work on the gradient test runs a potentiometer was used to measure maximum temperature attained during welding at 50 spots per minute. The readings taken from the potentiometer measurements were always about 20° to 25° lower than corresponding measurements taken from the Brush oscillograms. Investigation disclosed that the potentiometer galvanometer was too critically damped to indicate the rapid changes in thermal voltage occurring at the thermocouple junction.

The oscillograph recordings point to the fact that a considerable portion of the heat effects in the electrode resulted from the joule effect of the welding current passing through the electrode material.

Fig. 15 Electrode Used in Gradient Tests

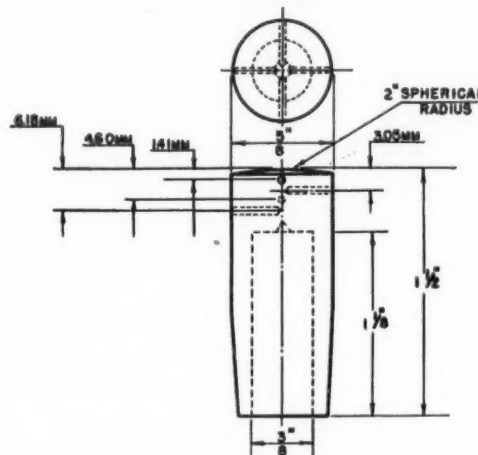
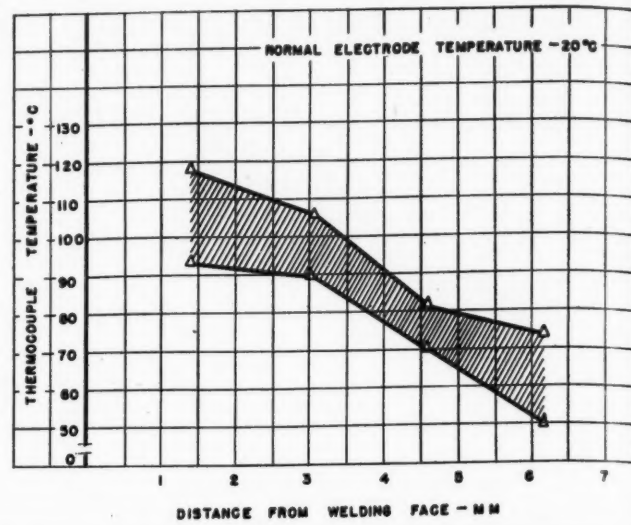


Fig. 14—Temperature Gradient in Refrigerant-Cooled Electrodes, Test A40



chine the electrodes were cleaned using a flat electrode tip cleaner to provide a 3/16-in. diameter flat area on both faces. This was done by rotating the paddle cleaner between electrodes while under a light pressure. The welder was then operated in the normal continuous sequence with welding current flowing but without having any material between the electrodes. Temperature recordings were made through 20 continuous operations.

In Fig. 16 the test results on water-cooled electrodes are plotted. Tests made with and without welding are recorded on the same graph and it is evident that a considerable portion of the heat effects occurring in the electrode are due to the generation of heat by the welding current passing through the electrode material. From curve, Fig. 16, the maximum temperature with water cooling during welding was 152°C , while without material being welded it was 102°C .

The results with refrigerant-cooled electrodes (see Fig. 17) indicate that the differential between the temperature maxima with welding and without welding are greater than with water cooling.

Deterioration of Spot Welding Electrodes as Affected by Water Cooling And Refrigerant Cooling

In spot welding of steel, stainless steel or other similar metals having relatively high hardness and strength, particularly at elevated temperatures, the electrode deterioration will occur principally through plastic deformation or "mushrooming" of the electrode face.

Mushrooming results in increased contacting area and decreased current pressure densities in the weld area. In time, therefore, with continued welding the weld strength will decrease below a minimum standard and the electrodes must be redressed to the original face contour.

In the spot welding of aluminum alloys having lower mechanical properties than the electrode material, the deformation of the electrode welding face becomes of secondary importance. The electrodes require frequent redressing or cleaning to maintain suitable standards of weld appearance and avoid sticking of the electrodes to the work.

In one case, therefore, deterioration of the electrodes results from mechanical causes, while in the other case deterioration is due to chemical reasons. In both cases the rate of deterioration is a function of the temperature at the face of the welding electrode.

(Continued on Page 11, Column 1)

Test No.	Type Coolant	Normal Electrode Temp., °C.	Flow Rate, Gal./Min.	Coolant Pressure High Side, Psi.	Recovery Temp., °C.	Average Time to Recovery, Sec.	Average Spots Per Min.	Maximum Temperature Attained at Thermocouple, °C.
A34	Brine	-26	1.85	40	-20	9.23	6.42	35
A33	Brine	-26	1.85	40	0	3.56	16.27	58
A35	Brine	-26	1.85	40	plus 25	2.48	23.0	71
A36	Water	plus 25	1.65	15	plus 25	7.16	8.25	82
A37	Water	plus 25	1.65	15	plus 50	2.2	26.8	95

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turn to -20°C . following a weld, and the maximum electrode temperature attained in any weld was 35°C .

In the case of water-cooled electrodes having a normal temperature of plus 25°C , an average of 7.16 seconds was required to return to 25°C . following a weld, and the maximum electrode temperature of any weld was 82°C .

The total temperature differential in both refrigerant-and water-cooling tests was approximately the same.

Thermocouple Position	Distance from Face mm.	Temp., °C. at 20 Spots			
		Refrigerated Electrodes		Water-Cooled Electrodes	
A	1.41	118	94	134	113
B	3.05	106	90	127	105
C	4.60	82	70	107	96
D	6.18	74	50	100	78

while in Table 8 the test data are compiled.

The maximum and minimum temperatures given in the table are those taken from the oscillograms after a quasi-equilibrium temperature had been established in the electrode during continuous spot welding at a speed of 50 spots per minute. Each test was run through a series of 20 consecutive welds.

Fig. 13 depicts graphically the maximum and minimum temperatures attained during welding at various distances from the welding face of the electrode when employing water cooling, while Fig. 14 shows the conditions for the refrigerant-cooled electrode test series.

The maximum and minimum temperature range decreases progressively from the welding face toward the water hole for both refrigerant- and water-cooled electrodes. However, the temperatures reached in the water-cooled electrodes were generally about 15 to 25°C . higher than in the refrigerant-cooled electrodes at any particular point in the electrode.

The general contour of the gradient

Relative Heat Effects in Electrodes Resulting From Material Being Welded and Heat Generated by Current Flow in Electrodes

In order to differentiate between the temperature attained in an electrode due to the conduction of heat from the material being welded and temperature resulting from heat due to the joule effect in the electrode material, a series of continuous spot-welding tests were conducted on both water-cooled and refrigerant-cooled electrodes when welding 24 ST Alclad and when simply permitting the electrodes to butt together with normal current flowing. The test electrodes' design was then shown in Fig. 5. The test was conducted as follows:

- Twenty continuous welds at a speed of 50 spots per minute were made while welding 24 ST Alclad.
- Without removing from the ma-

Fig. 16—Water-Cooled Electrodes, Tests A54 and A55

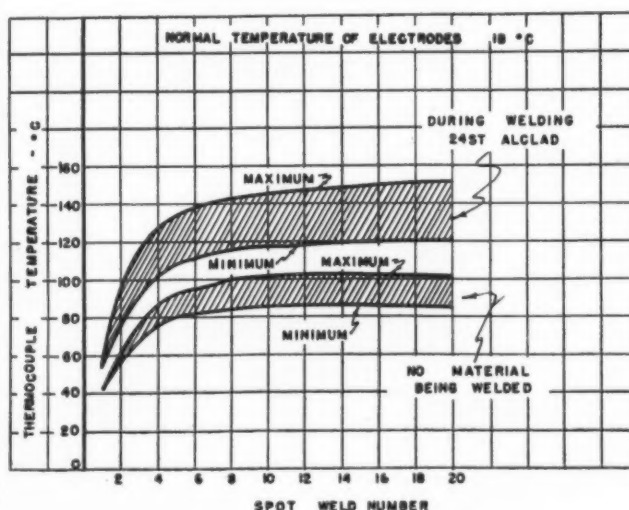
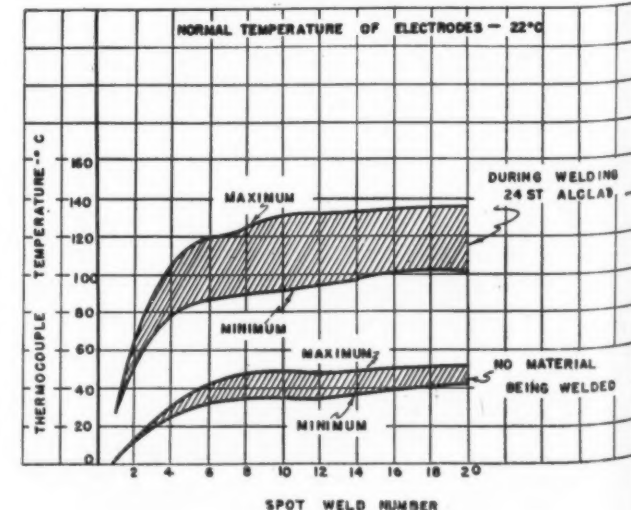


Fig. 17—Refrigerant-Cooled Electrodes, Tests A56 and A57



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Fig. 18

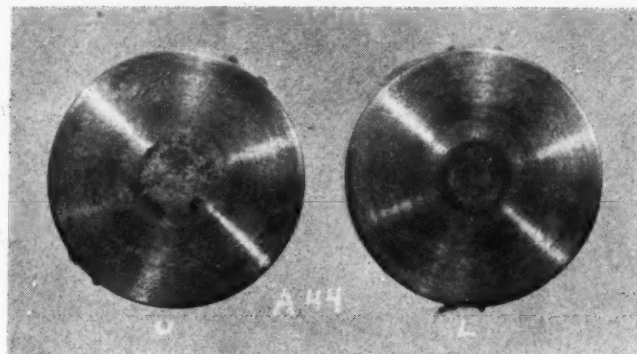


Fig. 19

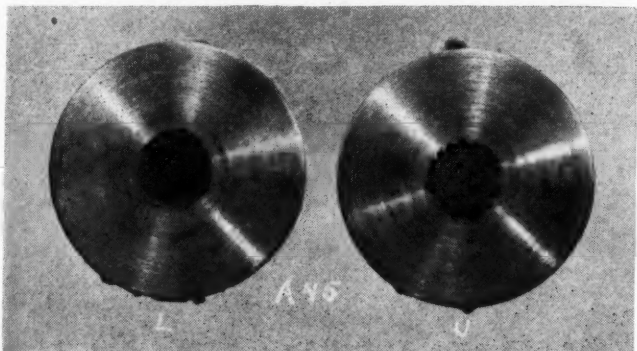


Fig. 24

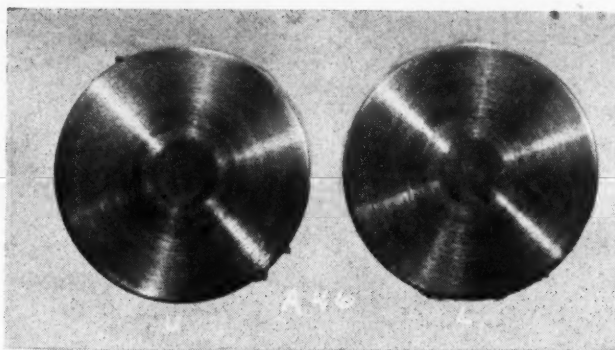


Fig. 25

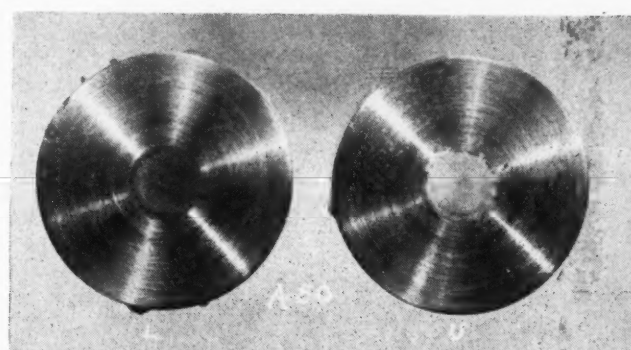


Fig. 26

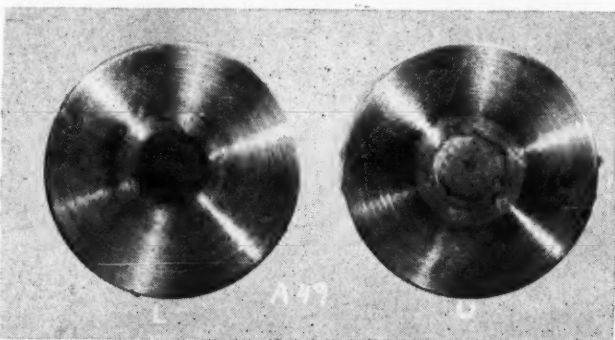
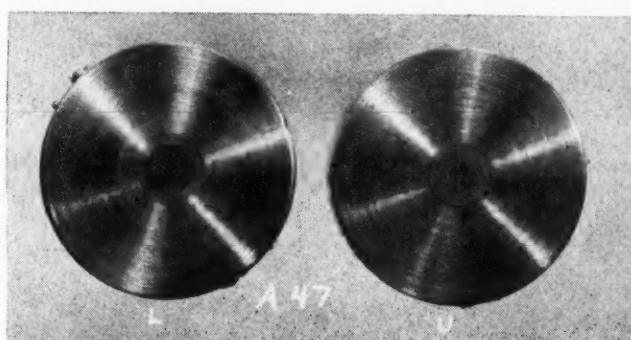


Fig. 27



Test Deterioration Of Electrodes Used

(Continued from Page 10, Column 5)

It is reasonable to assume that the maintenance of a lower temperature in the electrodes during welding would tend to reduce the rate of alloying between electrodes and aluminum sheet, and thereby reduce the frequency with which the electrodes must be cleaned.

Using the standard electrode design as shown in Fig. 5, a series of continuous welding tests were made to determine the rate or nature of

electrode deterioration using water cooling and refrigerant cooling.

Deterioration of Spot Welding Electrodes at a Welding Speed of 50 Spots per Minute.

Test A44 was run making a total of 40 welds on the same set of water-cooled electrodes at a rate of 50 spots per minute under the established welding conditions. At the 20th weld a 20-sec. interval before starting a second strip was allowed.

Test A45 was similar to the previous test, except a new set of electrodes was used and refrigerant cooled to a normal temperature of -22° C.

Temperatures attained in Tests A44 and A45 are tabulated from oscillograph recordings in Table 9.

Photographs of the water-cooled electrode from Test A44 are shown in Fig. 18, and the refrigerant-cooled pair from Test A45 are shown in Fig. 19.

The surface appearances of the spot welds were photographed and are listed as the following figures:

Fig. 20—20th weld in water-cooled test.

Fig. 21—40th weld in water-cooled test.

Fig. 22—20th weld in refrigerant-cooled test.

Fig. 23—40th weld in refrigerant-cooled test.

Examination of the electrodes revealed that the "pick-up" on the water-cooled electrodes is slightly more severe than occurred on the refrigerant-cooled pair. The appearance of the spot weld surfaces does not seem to have been materially improved by the refrigerant-cooled electrodes.

Incipient sticking of the electrodes to the aluminum sheet occurred at the 10th weld with the water-cooled electrodes and at the 13th weld with the refrigerant-cooled electrodes. Sticking became more severe as welding progressed, and more pronounced using water-cooled electrodes.

For instance, no difficulty was experienced in welding at 50 spots per minute using the refrigerant-cooled electrodes. On the water-cooled run it was very difficult after about the 18th weld to keep the aluminum strip moving and the welds spaced properly. On about the 25th weld a

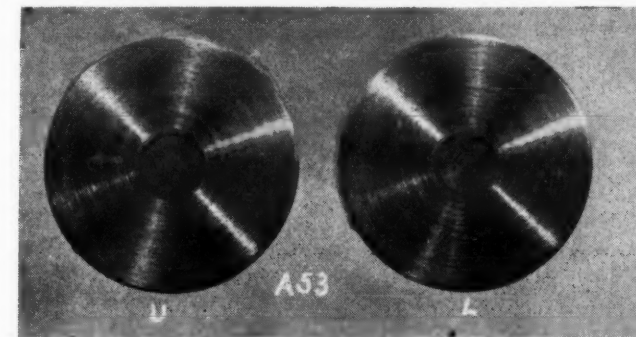


Fig. 28

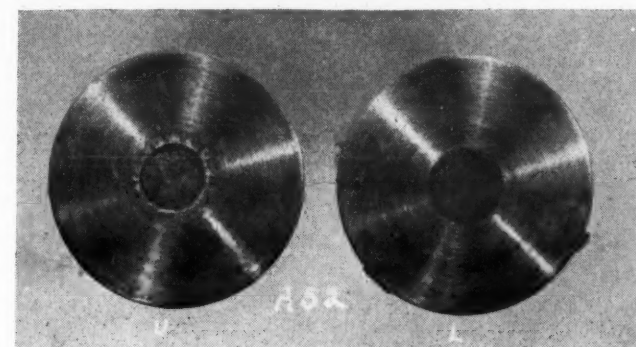


Fig. 29

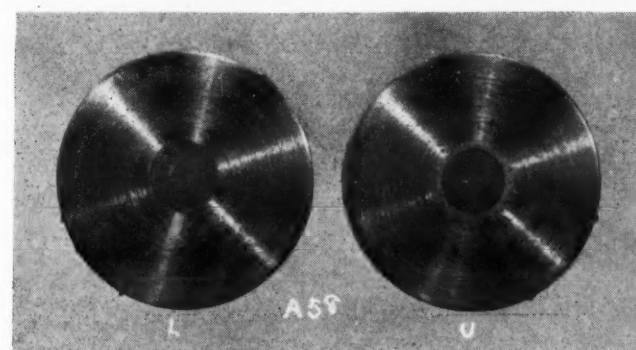


Fig. 30

Table 9—Temperatures Attained at Thermocouple, °C.

Spot Weld No.	Water-Cooled Electrodes Max.	Water-Cooled Electrodes Min.	Refrigerant-Cooled Electrodes Max.	Refrigerant-Cooled Electrodes Min.
Normal	19	19	-22	-22
1	55	53	28	52
2	87	75	64	64
3	106	90	86	74
4	122	103	94	78
5	132	109	102	82
6	137	113	108	86
7	139	118	112	88
8	141	120	116	89
9	142	121	119	89
10	144	120	119	89
11	144	120	119	89
12	144	121	121	89
13	146	123	121	89
14	148	123	121	89
15	148	124	121	89
16	148	124	121	89
17	149	124	121	89
18	150	124	121	91
19	150	124	123	92
20	150	...	123	...
(Twenty seconds interval before welding commenced on second strip.)				
21	58	54	24	22
22	90	79	60	49
23	113	96	82	63
24	128	106	98	75
25	135	112	108	82
26	139	116	116	88
27	144	120	119	89
28	148	120	121	90
29	148	121	121	90
30	150	121	121	90
31	151	121	121	90
32	151	121	121	92
33	151	121	121	92
34	151	121	121	93
35	151	121	122	93
36	152	121	122	95
37	152	122	124	95
38	154	123	124	95
39	154	123	126	96
40	154	...	126	...

Fig. 20

Fig. 21

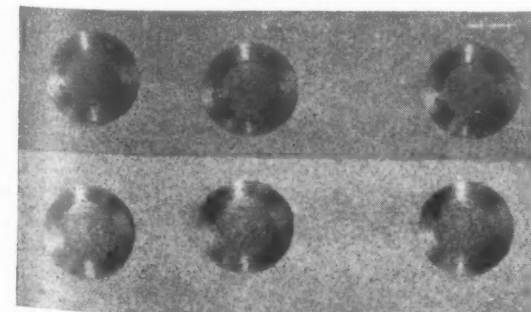


Fig. 22

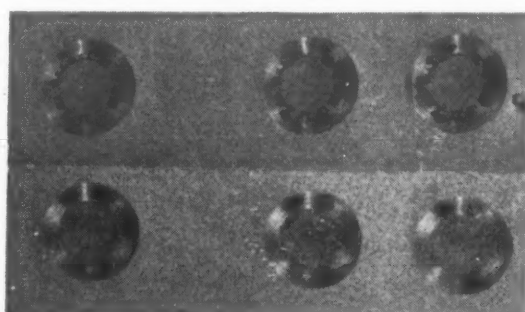
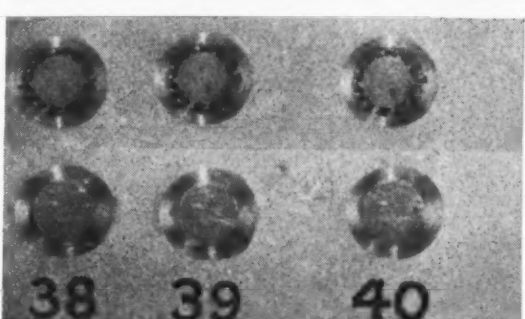
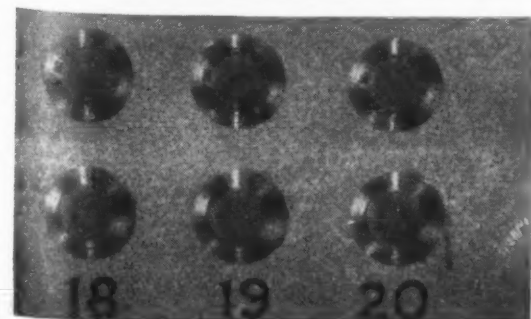


Fig. 23



double weld was made on the same spot because it was impossible to break the stick loose fast enough.

Sticking was more pronounced on the upper electrode. When sticking was definitely encountered on any particular weld, the electrodes in all probability stuck to both sides of the materials, but when the electrodes parted, the sheet adhered to the tip to which it was stuck more strongly.

Effect of Welding Speeds on Electrode Deterioration Rate.

As a result of the tests just

described it seemed that the maximum advantages which might be obtained with refrigerant cooling of electrodes would not be developed at rapid welding speeds. Therefore, a series of welding tests were made using water and refrigerant cooling



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at a rate of welding speed which allowed the electrodes to return to a normal temperature before each successive weld.

Three runs were made of 25, 50 and 100 welds for each type of cooling. The results of these experiments are tabulated in Table 10.

Incipient sticking occurred after about the same number of spot welds regardless of the type of cooling. However, the extent and severity of the sticking between electrodes and sheets were always more pronounced in the case of the water-cooled electrodes. The surface appearance of the spot welds did not seem to be greatly affected by different cooling methods.

Photographs of electrode faces after welding are shown in Figs. 24

(Continued on Page 12, Column 1)

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Table 10

	Water-Cooled Electrode Tests			Refrigerant-Cooled Electrode Tests		
	A46	A50	A49	A47	A53	A52
Total number welds	25	50	100	25	50	100
Normal electrode temperature	20° C.	15° C.	15° C.	-23° C.	-28° C.	-27° C.
Recovery temperature	20° C.	18° C.	18° C.	-20° C.	-25° C.	-25° C.
Average time between welds (seconds)	14.2	13.7	10.8	12.4	14.8	15.5
Average spot welds per minute	4.23	4.38	5.66	4.84	4.06	3.85
Incipient sticking occurred	9th	9th	12th	10th	12th	11th
Total number of sticks	16	41	88	11	20	69
Number of sticks to lower electrode	6	0	2	3	9	45
Number of sticks to upper electrode	10	41	86	8	11	24

Type of Equipment Used in Refrigerating Welding Electrodes

(Continued from Page 11, Column 5) to 29, inclusive, the various figures corresponding to the following tests:

Fig. No.	Test No.	Cooling	No. of Welds
24	A46	Water	25
25	A50	Water	50
26	A49	Water	100
27	A47	Refrigerant	25
28	A53	Refrigerant	50
29	A52	Refrigerant	100

The photographs indicate that the deterioration of the electrodes is less pronounced on the electrodes which were refrigerant cooled.

In most of the tests the upper electrode deteriorated more rapidly than the lower electrode. However, no measurable skidding of the electrodes could be observed and temperature measurements indicated that both upper and lower electrodes operated at similar temperatures. "Pick-up" and alloying of the electrode material occurred usually

in the form of a concentric ring around the outer circumference of the flat area which developed on the electrode face during welding. Figure 29 shows this condition on refrigerant-cooled electrodes after 100 spot welds. The upper electrode face shows the eroded concentric ring resulting from alloying action of the electrode with the aluminum. The material eroded from the electrode face is deposited on the surface of the spot weld and is detected by proper etching. Disturbances in the microstructure of the weld were found corresponding to the ring formed on the electrode.

A comparison of Tests A44 and A45 carried out at a welding speed of 50 spots per minute with the latter tests in which temperature recovery was permitted before each weld indicated that a decreased rate of electrode deterioration resulted when the electrodes were cooled to normal temperature before each weld.

Effect of Squeeze Period Duration on Rate of Electrode Deterioration.

Refrigerant cooling is of value only if it is possible to keep a superficial layer directly at or below the welding face of the electrode at a low temperature.

If the sheet to be welded (which is at room temperature) is placed against the refrigerant-cooled electrode, an exchange of heat occurs between electrode and sheet which increases the temperature of the welding face of the electrode.

If the welder squeeze period is relatively short, the high thermal conductivity of the aluminum will result in a rapid exchange of heat to the electrode raising the temperature of the electrode face.

At the time of the initiation of the weld current the electrode face may be at a temperature high enough to offset any advantage the refrigerant cooling system might provide.

In test A58 a series of 50 spot welds were made with long squeeze and hold periods, using refrigerant-cooled electrodes having a normal temperature of -26° C. The squeeze period was maintained sufficiently long to allow the face to recover temperature during the squeeze period and, also, to decrease the temperature of the aluminum strip under the electrodes to the electrode temperature, before the weld current was initiated.

The welder sequence was adjusted to the following:

Squeeze or delay period 15 sec. (avg.)
Weld period 8 cycles
Hold period 10 sec.
Welding speed... 2 welds per minute.

It was found that sticking of the refrigerant cooled electrodes was decreased somewhat, both in severity and number of sticks because lower superficial surface temperatures were maintained. The appearance of the electrodes from Test A58 is seen in Fig. 30.

Selective Deterioration of Electrodes

In practically all tests it was noted that electrode deterioration during welding was more pronounced in the upper electrode. Several probable causes of this preferential attack were investigated and it was found that the polarity of the electrode to sheet during the first one-half cycle of current flow determined which electrode would deteriorate more rapidly.

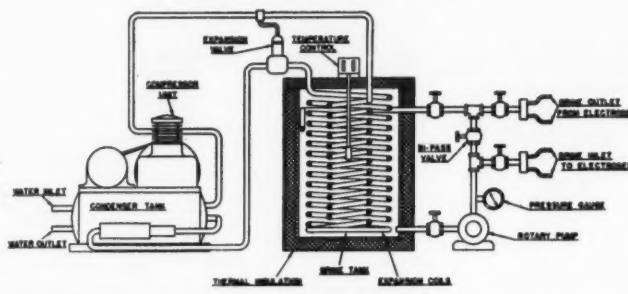
The effect of the electrode starting polarity on the relative rate of deterioration between either electrode was first expressed to the authors by C. C. Titherington of the Eastern Aircraft Corp.

The welding current timer used in our tests was a synchronous control which always initiated the current flow from a zero value. Moreover,

Table 11

Normal electrode temperature	-26° C.
Total number of welds	50
Recovery temperature	-24° C.
Incipient sticking occurred	16th
Total number of sticks	18
Number of sticks to upper electrode	15
Number of sticks to lower electrode	3

Fig. 31—Schematic Diagram of Refrigerating System



the current is always initiated with the same polarity. Investigation by means of oscillograph recordings disclosed that the normal starting polarity occurring in the secondary circuit rendered the upper electrode anodic (positive) with respect to the sheet or lower electrode.

Continuous welding tests were made using both refrigerant cooling and water cooling in which the current was initiated with reverse polarity or making the upper electrode cathodic with respect to the sheet during the first one-half cycle of the current.

This effect was accomplished in the timer circuit by restricting the rate of voltage rise on the secondary circuit of the timer impulse or peaking transformer. This prevented the impulse voltage from overcoming the grid bias of the time-on start tube during the leading cycle but allowed the second half of the cycle to be pulled in.

With this reverse polarity starting, the selective deterioration was transferred to the lower electrode.

The transfer of the selective deterioration with reversed starting polarity was very strongly marked and it is evident that the electrode that is anodic (positive) with respect to the aluminum sheet during the first one-half cycle of the welding current, deteriorates at a more rapid rate than does the opposite electrode. The selective deterioration results in the erosion of copper from the electrode face.

The possibility of electrolytic effects on the erosion is being studied.

Summary

While the present investigation has been confined to the spot welding of aluminum alloys with a specific electrode and holder design, it can be stated that definite benefits can be derived in standard a-c. welding with refrigerant cooling. These benefits might be further enhanced by modifying the electrode design. The advantages of refrigerant-cooled welding electrodes used in conjunction with the stored energy welding processes should be studied. Test data so far available indicate that the beneficial effects of refrigerant cooling are more pronounced in this type of welding.

Acknowledgment

The authors wish to acknowledge the work of G. E. Korb, who carried out many of the welding tests, and the assistance of H. C. Apley for his work on the amplification system.

Appendix A

Refrigeration System for Artificially Cooling Spot-Welding Electrodes

A typical indirect refrigeration system was used and the essential features are illustrated by the schematic diagram, Fig. 31.

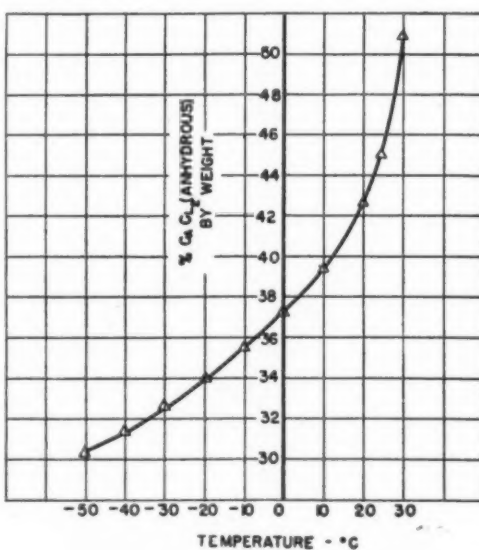


Fig. 33

Maximum Solubility of Anhydrous CaCl_2 vs. Temperature—Solid Phase in Equilibrium $6\text{H}_2\text{O}$.

Fig. 32—Refrigerating System

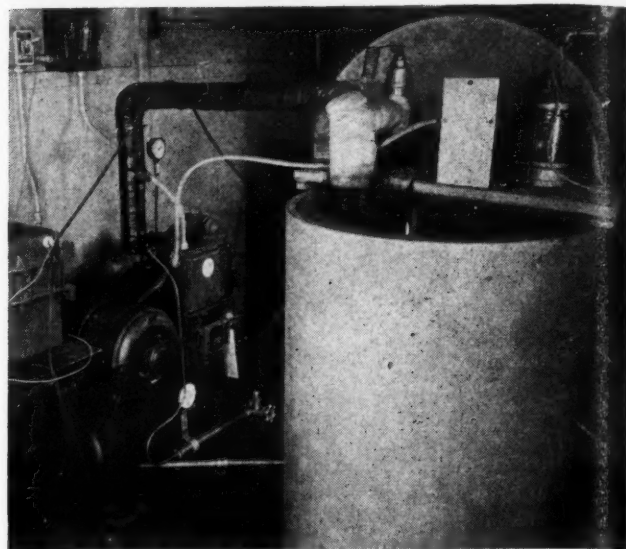
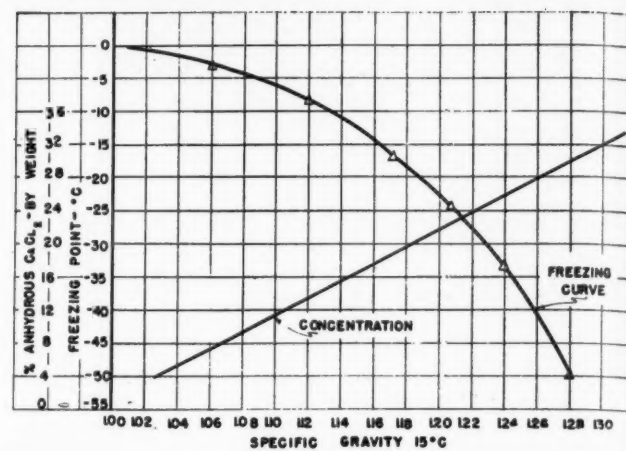


Fig. 34—Calcium Chloride Brine Chart



The high-pressure side was a self-contained closed direct expansion unit, and the refrigerant in the primary side is "Freon."

The expansion coils are immersed in a steel tank which holds a calcium chloride brine solution. The evaporator coil consists of about 150 ft. of 3/4-in. iron pipe. The brine tank was 20-in. diameter by 36-in. deep inside and held 36 gallons. The temperature of the brine is controlled by a thermostat well immersed in the center of the brine solution.

The cooled brine solution was forced through the electrodes and back to the brine tank by a centrifugal pump. The inlet pipe was so arranged as to provide a swirling and stirring action to the brine around the evaporator coils.

In operation the by-pass valve shown served to regulate the pressure and rate of brine flow through the electrodes. When the electrodes are to be removed from the holders for replacement, the pump motor was shut off and the inlet and outlet valves closed. A small drain stopcock was used to drain the brine from the holders. After the tips were removed the holders, and particularly the holder tapers, were flushed out carefully with warm water.

In order to prevent freezing of the calcium chloride solution at temperatures as low as -45° C., the concentration of the salt was adjusted to obtain a specific gravity of 1.275 gm./cc. to 1.280 gm./cc. measured at 15° C.

In a commercial installation the specific gravity of the brine is maintained as low as practical in order that the solution may have a minimum viscosity. With a specific gravity of 1.275 gm./cc. at 15° C., the specific gravity of the brine at -40° C. would be 1.300 gm./cc. Relative viscosities of the brine solution with water are given.

For calcium chloride brine systems the solubility of anhydrous calcium chloride as a function of temperature is observed in Fig. 33 (International Critical Tables).

The concentration of calcium chloride and freezing point as a function of the specific gravity, according to W. H. Motz (Principles of Refrigeration) are plotted in Fig. 34.

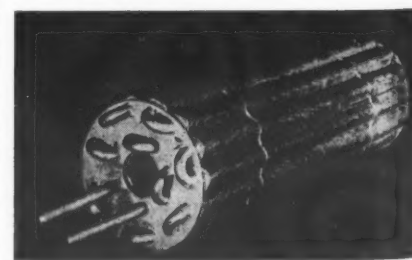
Salt brines, although cheap and readily replenished, are very corrosive and rapidly deteriorate most base metal materials. Brine deposits allowed to remain on welder parts may cause serious corrosion, impairing the mechanical or electrical functions of the equipment.

Furthermore, the calcium chloride brines have a disadvantage in throwing out insoluble precipitates with untreated waters. In both sodium chloride and calcium chloride brines if the concentrations exceed 23% and 33%, respectively, solid salt may deposit out. The corrosive action of the salt brines may be reduced by the addition of certain chemical buffers and protective colloids.

Other solutions, many of which are no more corrosive than water, may be used as circulating refrigerants. Some of these are alcohols, acetone, carbon tetrachloride, methylene chloride, glycerine and ethylene glycol (prestone).

(Concluded on Page 13, Column 1)

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This Rome Jointless Water Cooled Condenser is a typical example of Rome's ability to provide trouble free condensing equipment. Rome Water Cooled Condensers are used by many leading compressor manufacturers. Write for complete information.

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Important! Cooperation in the return of cylinders will help everyone in the industry. Look through your stocks and warehouses for any empty cylinders, or cylinders which can be emptied . . . and return them promptly. Electrochemicals Dept., E. I. du Pont de Nemours & Co. (Inc.), Wilmington, Delaware.

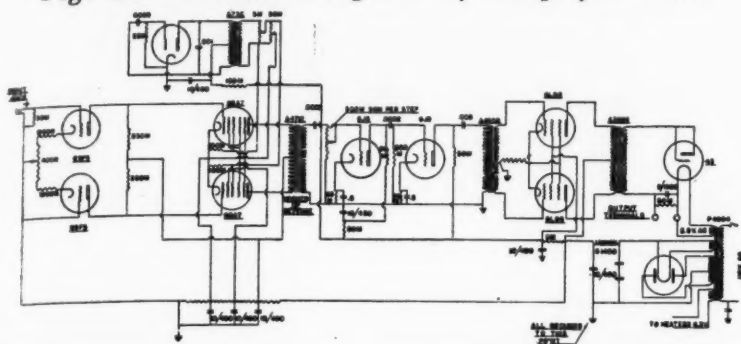


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Fig. 35—Circuit Diagram of Amplifier Unit



(Concluded from Page 12, Column 5)

Appendix B

Temperature-Recording Instrument and Associated Equipment

In the authors' previous paper, a temperature recording system was disclosed to obtain graphical and continuous indications of temperature changes occurring in spot-welding electrodes.

The present equipment is similar to that used previously, except considerable refinements were incorporated in the method of amplifying the thermal voltage so it could be recorded on the Brush Crystal Type Direct Inking Oscillograph.

The amplifier unit (Fig. 35) increases the magnitude of the small millivoltage generated by the thermocouple, to several hundred volts necessary to obtain a suitable deflection of the oscillograph pen.

A copper-constantan thermocouple was used in all tests and a cold junction at 0° C. was provided in order that all calibrations could be made from zero millivolt input at 0° C. Calibration curves of millivolt input for both positive and negative polarity, therefore, had a reference junction at 0° C. The neutral axis on the oscillograph chart (no voltage on crystal element) was consequently indicative of 0° C.

The input signal to the amplifier disturbs the grid balance between the two 6SF5 triodes which are initially balanced by the 400 R potentiometer with no signal voltage. The initial signal unbalances to a greater degree the first grids of the pair of 6SA7 pentagrid tubes, allowing a signal from the 1,000-cycle oscillator circuit to flow in the plate circuit. The oscillator voltage is above 15 v., carefully balanced by means of the voltage dividers across the oscillator output transformer.

The 1,000-cycle signal is further amplified through the 6J5 tubes and modulated by the 6L6's. The output transformer signal is rectified by the 45.

The voltage gain is adjusted by the 500 M potentiometer ahead of the first 6J5 tube. The 1,000-cycle signal is virtually unaffected by the low-frequency fields around the resistance welder.

It was necessary to provide a voltage stabilizer in the 110-volt a.c. supply ahead of the amplifier to prevent

line voltage fluctuations from affecting the amplifier calibration.

Balance and calibration were checked using a potentiometer as a source of input signal and using a vacuum tube voltmeter or a 1,000-ohm/voltmeter connected across the output terminals.

In some cases when the equipment was allowed to stand idle while heated for several hours, there was a tendency for the calibration to drift. This, of course, was indicated on the vacuum tube voltmeter so that any drifting was always apparent. In using higher gain ratios, it was found impossible to balance the system down to zero output voltage and in order to do this, it was necessary to use a 45-v. "C" battery across a 50 M ohm voltage divider in series with the output circuit and at opposite polarity so that any portion of the battery voltage may be utilized to "buck out" any residual output voltage when the input signal is zero.

Balancing of the amplifier must be accomplished so that the millivolt input signal never drives the output to opposite polarity.

Input leads were twisted to avoid loops and shielded. It was impossible to filter out the a.c. voltage to ground at the electrode with welding current flowing, and it was necessary to insulate the thermocouple bead from direct electrical contact with the welding electrode.

A typical calibration curve obtained on a particular gain setting has been plotted in Fig. 36.

A photograph (Fig. 37) reveals the recording equipment, including the Double Pen Brush Oscillograph. The second pen records the primary current magnitude and duration.

The recorder has three chart speeds which are 5, 25, and 125 mm. per second, respectively.

A typical oscillogram on both refrigerant-cooled and water-cooled electrodes while welding at 50 spots per minute is revealed by Fig. 38. The chart shows 20 continuous spot welds and in the case of refrigerant cooling, temperatures both above and below zero are indicated on the same side of the zero axis. The output circuit does not indicate opposite polarity but the interpretation of the graph is clear by observing the temperature increasing to zero by falling to the zero axis and increasing above zero during the first weld period.

A schematic diagram (Fig. 39) indicates the essential interconnections of the recording system.

Fig. 38

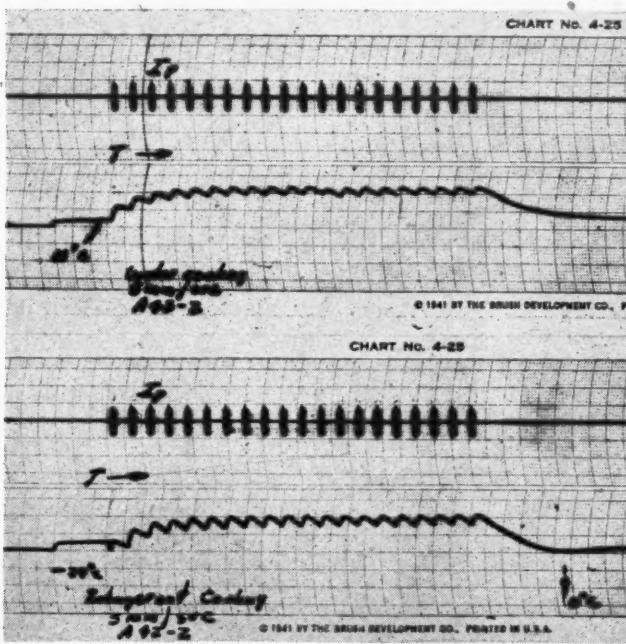
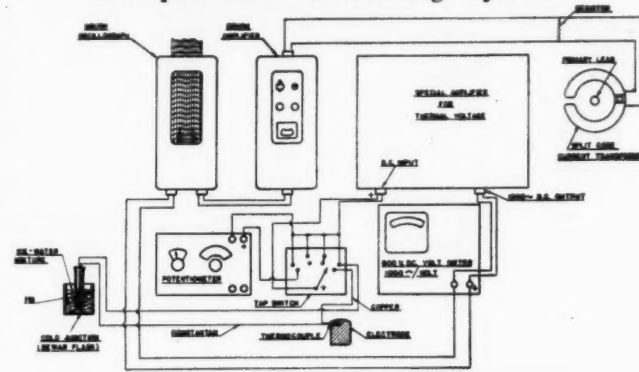


Fig. 39—Diagrammatic Layout of Temperature Recording System



all plumbing fixtures designed as an integral part of each structure. The machine and wartime discoveries of materials will give us an art that we can truly call the American art of our day, an honest art, truthfully expressed without frills. Every material we have at our command has inherent possibilities of beauty if intelligently used.

One of the hurdles to development of a national art of design theme for America before the war had been the periodic tendency toward a frivolous fashion drunk, as different from sensible styles as a Zoot suit and conservatively-tailored clothes. Good design is honest, functional and simple, whether it applies to clothing or kitchen stoves. We had more machines, more new materials than ever before, but we did use them sensibly. We produced toasters, waffle irons and ranges but covered them with scrolls and flowers and forms of conventionalized design because the fashion of the moment demanded it.

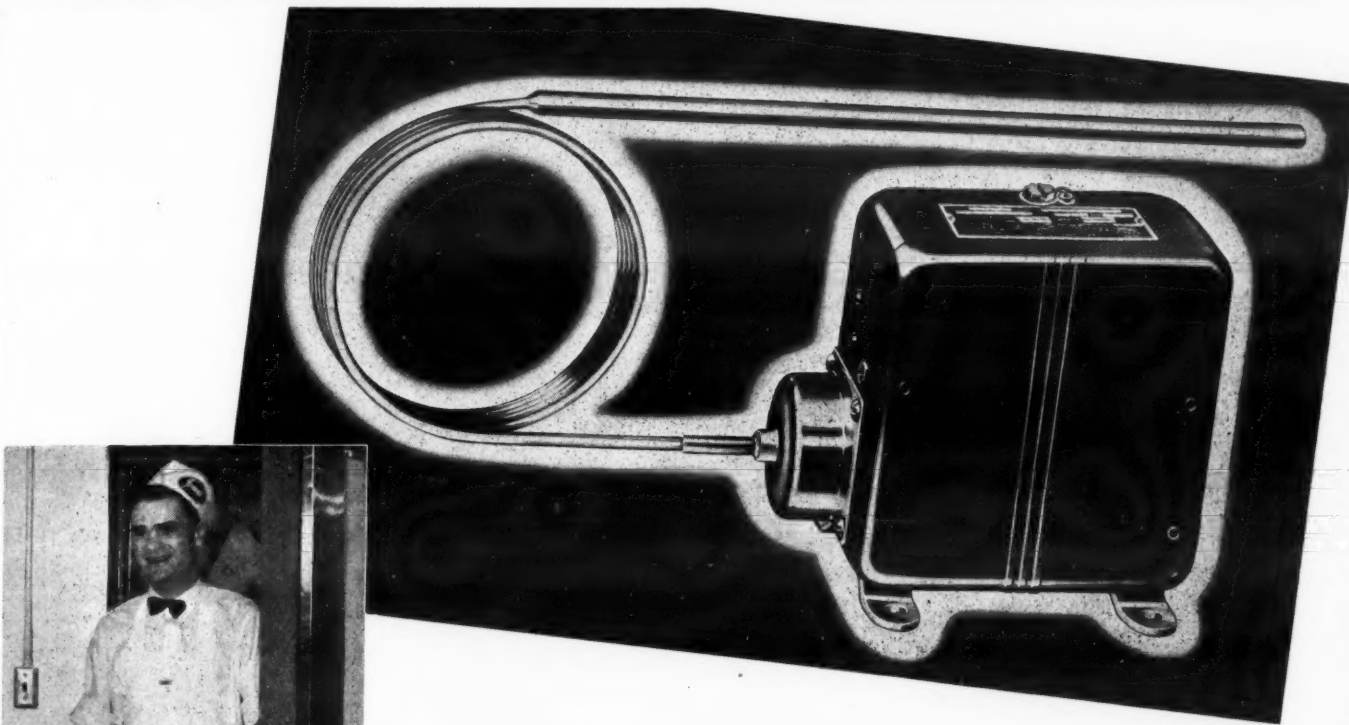
Post-War House Will Be Built Around Main Home Furnishings, Says Engineer

EAST PITTSBURGH, Pa.—The post-war prefabricated home will be built around home furnishings at two-thirds the cost of a comfortable modern residence, Donald L. Hadley, Westinghouse consulting designer, recently told the Pittsburgh section of the American Ceramics Society.

Such a home may be planned step by step from scale models of the piano, refrigerator and other furnishings which you own or will buy. It

will be possible to select the home in concrete, plymetal, plywood or enameled steel directly from the manufacturer or his agents.

Mr. Hadley, who has streamlined everything from an electric household iron to a hundred-ton turbine for the Westinghouse Electric & Mfg. Co., told the meeting at the Mellon Institute that the prefabricated home, made inexpensive by machine mass production, will be durable and have



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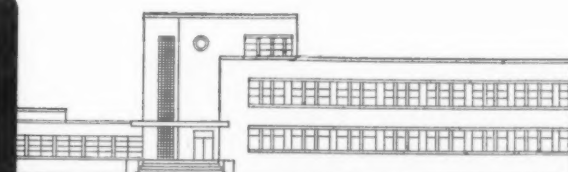
Here is a job made to order for Avrgaire—Penn's sensational refrigeration control with its valuable "cold anticipation" feature. Avrgaire, through a unique new method of bulb application, establishes an entirely new standard of refrigeration control for walk-in coolers and cases.

Avrgaire holds temperatures within extremely

close limits. It automatically defers defrosting when box temperature is raised, as by a heavy load of warm meat, until proper refrigerating temperature is restored. And it maintains correct humidity, avoiding both drying out of meats and excessive sliming, with the consequent loss incurred through necessary trimming.

Under war-time priority regulations Avrgaire is available to food merchants who can show an actual need. Penn can supply these, as well as other temperature and pressure controls, for refrigeration and air conditioning under the established rules. Write for complete information. Penn Electric Switch Co., Gosben, Indiana.

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Fig. 36

Oscillograph Calibration Chart
Copper-Constantan Thermocouple.
Gain Position—No. 2.

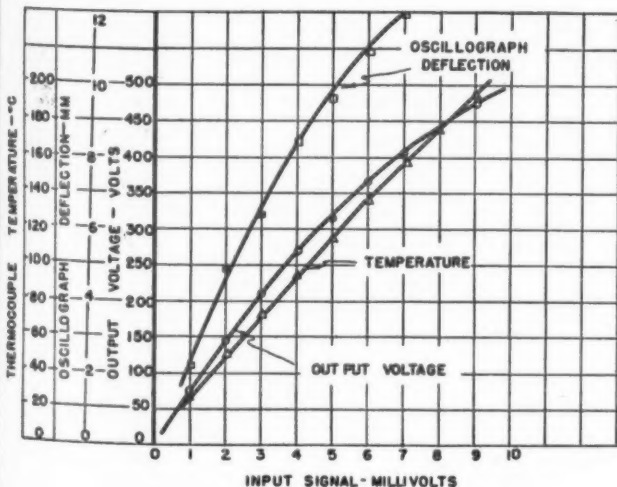
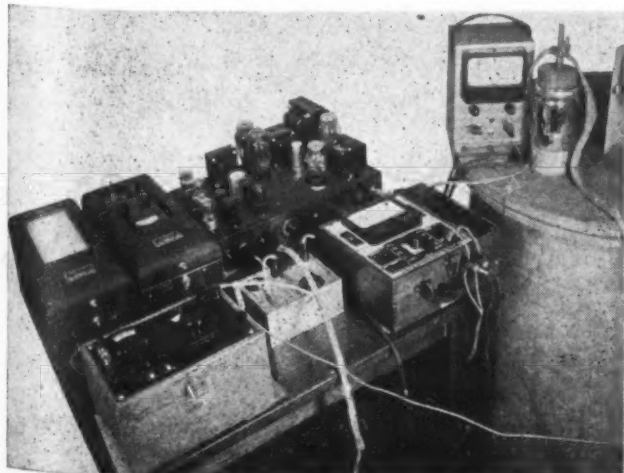


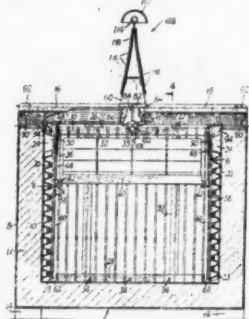
Fig. 37



PATENTS

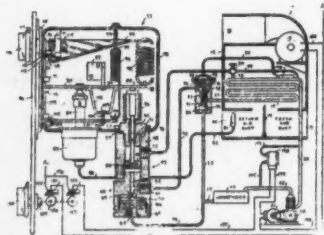
Weeks of Dec. 29 & Jan. 5

2,306,385. REFRIGERATION APPARATUS. Charles H. Herter, New York, N.Y. Application May 29, 1940, Serial No. 337,767. 12 Claims. (Cl. 62-89.5).



1. In refrigeration apparatus of the class wherein materials are stored in a chamber having a top opening permitting access thereto, the combination of: a cabinet construction including an outer shell and an inner shell with heat-insulating material therebetween; refrigerating and supporting means upon the side walls of said inner shell and providing reinforcing means therefor including a sheet-metal construction having horizontally extending corrugations, refrigerant pipes extending along the corrugations, and vertically extending brace means; a tray within said cabinet construction; and supporting means for said tray comprising pulley means mounted at the top of said inner shell, and counterbalancing means positioned within said inner shell and mechanically connected through flexible cable means and said pulley means to said tray.

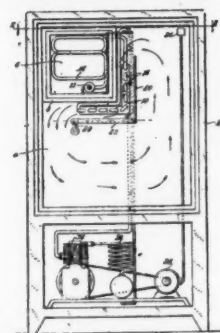
2,306,463. AIR CONDITIONING SYSTEM. Alvin B. Newton, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application July 26, 1939, Serial No. 286,594. 14 Claims. (Cl. 62-8).



4. In a refrigeration system, an evaporator means, means for circulating refrigerant through said evaporator means, thermostatic expansion valve means for controlling the flow of refrigerant through said evaporator means, said expansion valve means including a pressure responsive operating means, means providing communication between one side of said operating means and a portion of said evaporator means wherein the pressure is lower than at the inlet side thereof, means providing communication between said one side of said operating means and the high pressure side of said expansion valve means, one of said last named means being arranged to provide for only a restricted flow therethrough, and valve means controlling the flow through the other of said last named means, and means forming a restricted passageway between said one side of said operating

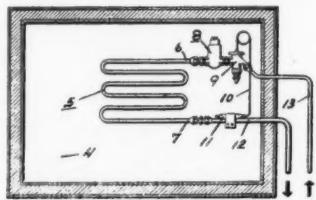
means and the low pressure side of said expansion valve means.

2,306,480. REFRIGERATOR, AIR COOLER, AND THE LIKE. Irving M. Ketcham, Glenhead, N. Y. Application Dec. 29, 1934, Serial No. 759,605. 16 Claims. (Cl. 62-116).



3. A mechanical refrigerator comprising a freezing chamber, a refrigerating chamber, a coil carrying a refrigerant having one portion thereof located in the refrigerating chamber, the latter portion of said coil lying adjacent said freezing chamber at the side thereof and having at least a portion thereof located in the upper portion of the refrigerating chamber, a substantially vertical baffle spaced from the top and bottom of said chamber and defining a narrow path for the flow of air by convection over that portion of the coil in the refrigerating chamber and means located adjacent the lower portion of the baffle for supplying moisture to air passing downwardly over the coil.

2,306,534. REFRIGERATING SYSTEM. Max P. Freres, Chicago, Ill., assignor to Anthony F. Roedel, Chicago, Ill. Application April 30, 1940, Serial No. 332,589. 2 Claims. (Cl. 62-8).



2. The combination with a compartment of an intermittently operated refrigerating system for cooling the same; said system comprising a cooling unit having an inlet and an outlet between which a volatile refrigerant is circulated; an expansion valve connected to said inlet and controlling the rate of refrigerant feed, to said cooling unit, responsive to two forces, one force being the pressure of the refrigerant fluid, in said cooling unit, and tending to increase the feed with reducing pressure and vice versa, the other force being responsive to temperature conditions of the refrigerant fluid passing through said outlet and tending to decrease the feed with reducing temperatures and vice versa; and an adjustable pressure differential valve, in said inlet and interposed between said cooling unit and said expansion valve, in order to provide a differential pressure between said cooling unit and said expansion valve and thereby modify the first named force.

2,306,608. COMPRESSOR FOR REFRIGERATING APPARATUS. Earl P. Hu-backer, Highland Park, Mich., assignor to Borg-Warner Corp., Chicago, Ill., a corporation of Illinois. Application Feb. 5, 1940, Serial No. 317,223. 2 Claims. (Cl. 230-207).

1. In a refrigerating system having a high pressure side and a low pressure side, a casing comprising a part of the

(Continued on Page 15, Column 1)

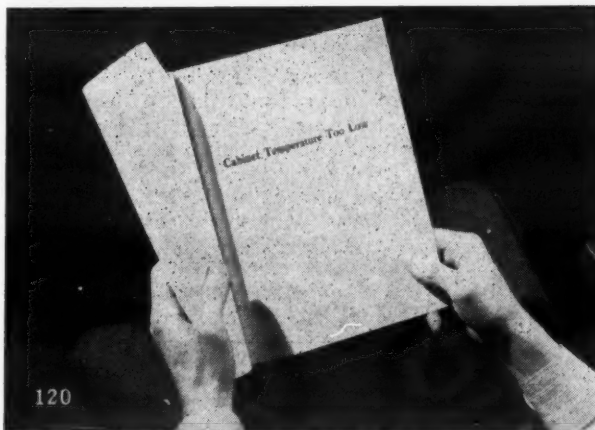
Servicing the G-E Scotch Yoke Refrigerator Machine

From the General Electric Service Dept. Educational Film of the Same Name

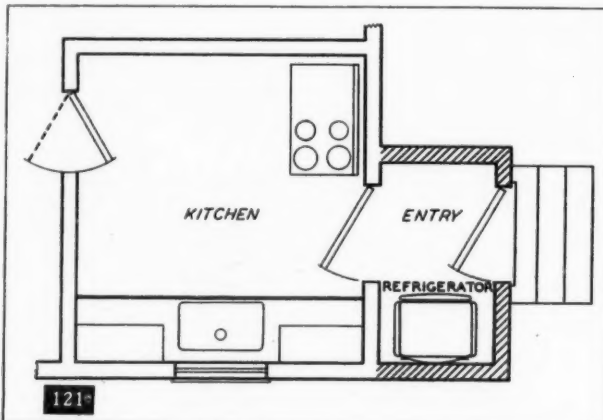
(INSTALMENT 10: CABINET TEMPERATURES TOO LOW)

Editor's Note: The editorial material on these pages is a published version of "Servicing Scotch Yoke Machines," originally presented as a sound slide film produced by the Product Service Division of General Electric's Appliance and Merchandise Department. The material is appearing in installment form in Air Conditioning & Refrigeration News, by permission of the General Electric Co.

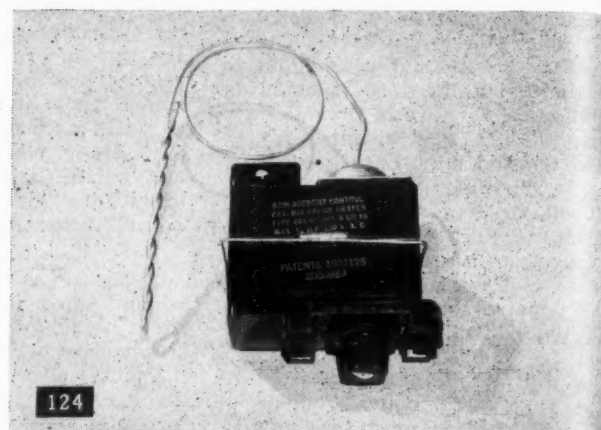
Previous instalments are:
Instalment 1 (Sept. 28)—Principles of Machine Operation.
Instalment 2 (Oct. 12)—Operation of the Temperature Control.
Instalment 3 (Oct. 26)—Finding Out Why Sealed Unit Will Not Run.
Instalment 4 (Nov. 9)—Checking Temperature Control and Starting Relay.
Instalment 5 (Nov. 23)—Checking Capacitor and Wiring to Find Trouble.
Instalment 6 (Dec. 7)—"Will Not Run" and "Trips Off on Overload" Complaints.
Instalment 7 (Dec. 21)—Correcting Complaint of "Unsatisfactory Refrigeration."
Instalment 8 (Jan. 4)—Correcting Control Problems and Checking Other Symptoms.
Instalment 9 (Jan. 18)—Discharge Valve Leaks and Stuck Float Valves.



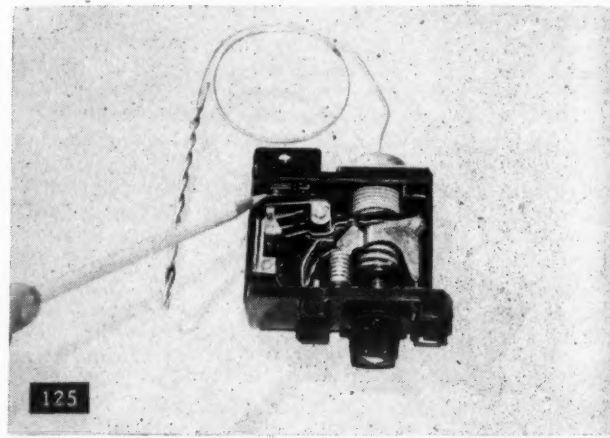
(120) To go from one extreme to the other, how about complaints from customers who claim that food is freezing?



(121) In most cases you will find their refrigerators located in unheated pantries, back porches or other cold rooms.



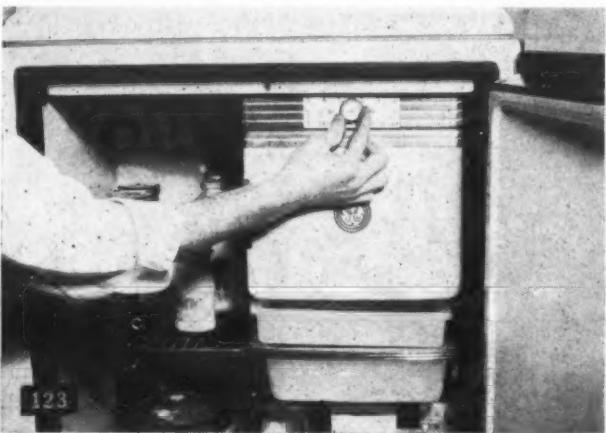
(124) When the cabinet is too cold in normal room temperatures, this is entirely due to the control.



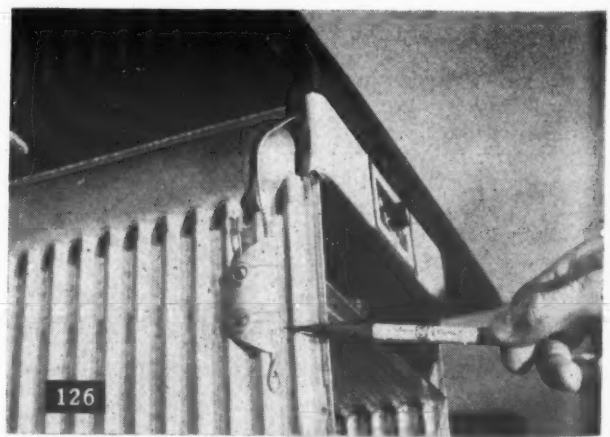
(125) If the machine runs all the time, and the food freezes, the control contacts are probably stuck together and the control should be replaced.



(122) The cabinet temperature drops with the room temperature. If the room is below 55° F., it is apt to go below freezing in the cabinet. This is true on all models except the 1941 Deluxe with the "Steady Cold Control." At any rate, it is advisable to move the machine to a warmer location.



(123) If this is not possible, setting the control to a warmer position, or even resetting it may help.



(126) First, however, be sure that the bellows tube is tightly clamped to the evaporator, because a loose bulb will also cause long running and low temperature.

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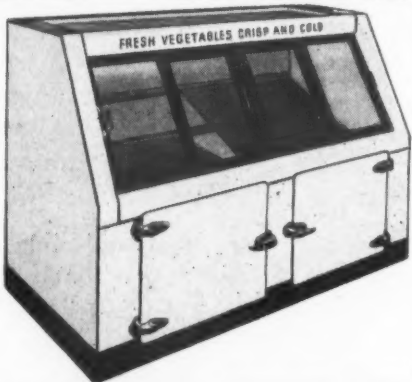
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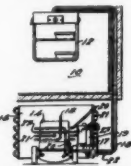
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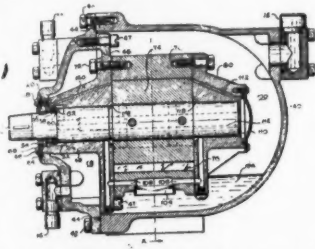
(Continued from Page 14, Column 2)

low pressure side and forming a low pressure gas and lubricant reservoir, a rotary compressor in said casing sub-merged in the lubricant, said compressor including means defining a housing formed with a cylinder therein, a driving



shaft having an eccentric within the cylinder, a hollow rotor freely journaled on an eccentric, said cylinder having a slot in the wall thereof, a divider resolvable in said slot and engageable with said rotor, said cylinder having an intake port on one said of said divider and means defining a pressure responsive and discharge valve assembly on the other side of said divider, means defining a side of said divider in the wall of said housing in direct communication with said discharge valve assembly, and passage defining means for delivering lubricant from the lower portion of said trap under the discharge pressure of said compressor into lubricating contact with the rear of said divider.

2,306,632. REFRIGERATING APPARATUS. Alex A. McCormack, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Sept. 28, 1940, Serial No. 358,883. 10 Claims. (Cl. 62-115).



1. A cast iron frame member, compressor mechanism secured to said frame member and having a shaft journaled in said frame member, a first aluminum casting enclosing a first portion of said frame member and forming with said frame member a first refrigerant chamber, a second aluminum casting enclosing another portion of said frame member and forming a second refrigerant chamber, an inlet port for said compressor, an outlet port for said compressor discharging into one of said chambers and means for supplying high pressure liquid refrigerant to the other of said chambers whereby said liquid refrigerant is in thermal exchange with said frame member and one of said aluminum castings.

2,306,702. REFRIGERATING APPARATUS. Theodore W. Koerner, Detroit, Mich., assignor to Nash-Kelvinator Corp., Detroit, Mich., a corporation of Maryland. Application July 5, 1940, Serial No. 343,985. 2 Claims. (Cl. 285-90).

1. A fluid conditioning device comprising a flexible tube having two annular beads formed thereon to present two sets of spaced apart opposed inclined surfaces with one set lying on the outside of the other set, a coupling member having a surface bearing against one of said outside opposed surfaces, a second coupling member arranged to apply its force against the other of said outside op-

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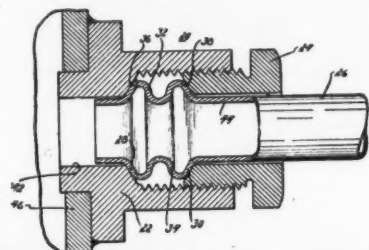
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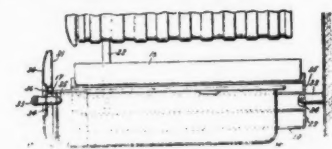
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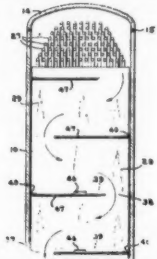
posed surfaces and means for urging said members toward each other to effect a seal between the surfaces of the said coupling members and said opposed outside inclined surfaces while the opposed inside set of inclined surfaces tend to yield toward each other due to the flexibility of the tube.

2,306,802. FOOD STORAGE RECEPTACLE FOR REFRIGERATORS. George C. Harbison, Erie, Pa., assignor to General Electric Co., a corporation of New York. Application Aug. 20, 1941, Serial No. 407,589. 3 Claims. (Cl. 62-89).



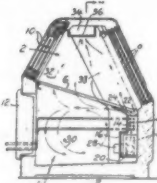
1. In a refrigerator cabinet having a food storage receptacle, a support for said receptacle for carrying said receptacle in one of a plurality of vertically spaced-apart positions, a cover for said receptacle and means for supporting said cover above said receptacle, means carried by said support for closing the space between said cover and said receptacle around three sides thereof, and means carried by said receptacle for closing the space between said cover and said receptacle on the remaining side thereof in all closed positions of said receptacle, and means providing ventilation for said receptacle, said means being arranged and constructed to provide increased ventilation in each successively lower position of said receptacle.

2,306,895. HEAT EXCHANGE APPARATUS. Millard A. Nelson, Sharon H. H. Pa., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Oct. 10, 1940, Serial No. 360,551. 3 Claims. (Cl. 257-28).



1. Heat exchange apparatus comprising a vertically-disposed shell, a plurality of tubes extending longitudinally of said shell, waterbox structure associated with said tubes and providing for circulation of water therethrough in a plurality of passes, baffle structure dividing the space within the shell into a plurality of steam passes, means dividing said first steam pass into a lower desuperheating section and an upper condensing section, the shell having an exhaust steam inlet to said desuperheating section and a condensate outlet from the last steam pass, said dividing means comprising a plurality of longitudinally-spaced trays extending transversely of the first steam pass with their edges in sealing engagement with the shell and baffle structure constituting the walls of said pass, said trays each having one or more openings therethrough for passage of steam from the desuperheating section to the condensing section with the opening or openings of each tray disposed in non-overlapping relation to the opening or openings of adjacent trays and having a dam at the periphery of each opening to prevent flow therethrough of condensate collecting thereon, means for discharging to a condensing section of the apparatus condensate collecting on the trays, and means for preventing passage of condensate through clearances between the trays and the tubes of the first steam pass extending therethrough.

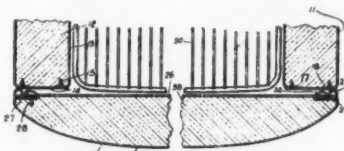
2,306,969. REFRIGERATED DISPLAY CASE. Malcolm D. MacMaster, Yardley, Pa., assignor to C. V. Hill & Co., Inc., a corporation of New Jersey. Application Sept. 4, 1941, Serial No. 409,468. 7 Claims. (Cl. 62-89.5).



1. A refrigerated display case having an upper display chamber and a lower storage chamber, article supporting means separating said chambers and formed with openings through which air may pass from one chamber to the other, a refrigerating chamber having a cooling coil therein, means forming an outlet for directing air from the refrigerating chamber in a generally horizontal direction across said case adjacent said article supporting means, and means forming air channels communicating with said refrigerating chamber and having inlets above and below said outlet whereby a portion of the horizontally directed air from the refrigerating chamber is caused to flow upward through the display chamber and another portion of said horizontally directed air is caused to flow downward through the storage chamber.

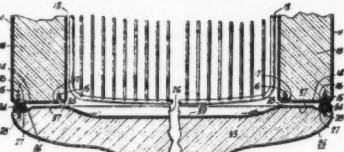
2,307,093. REFRIGERATOR CABINET. Orland H. Yoxsimer, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Dec. 31, 1940, Serial No. 372,608. 1 Claim. (Cl. 20-35).

1. In an insulated refrigerator door, the combination of an integral inner wall



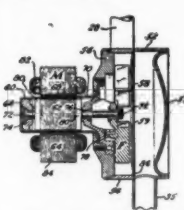
formed of thin substantially rigid heat insulating material having coplanar marginal portions, a domed outer wall having an inwardly extending flange provided parallel to the marginal portions of the thereon throughout its periphery lying heat-insulating material, said flange lying adjacent the edges of said marginal portions of the heat insulating material and overlapping therewith, and means securing the edges of the marginal portions of the heat insulating material to the flange of the outer wall throughout their peripheries, said inner and outer connected walls being substantially the sole members providing for the rigidity of the door.

2,307,094. REFRIGERATOR CABINET. Orland H. Yoxsimer, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Dec. 31, 1940, Serial No. 372,608. 1 Claim. (Cl. 20-35).



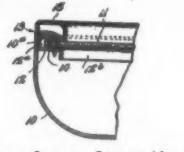
In a refrigerator cabinet, the combination of a cabinet structure having an access opening; heat breaker strips disposed around said opening, said heat breaker strips having the major portion of their exposed surfaces lying in one plane and surrounding said opening; and a door for said opening, said door comprising an outer arched panel, an inner panel of rigid heat-insulating material secured at its edges to the edges of said outer panel, and nonrigid heat-insulating material between said panels, said door overlying said exposed major portion of the breaker strips; and a sealing gasket between the cabinet and the periphery of said door, said inner panel having portions adjacent the sealing gasket lying in substantially one plane, said inner panel also having portions facing said major portions of the breaker strips which portions of the inner panel are offset toward said breaker strips from the plane of the portions of the panel adjacent said sealing gaskets to decrease the air gap between said inner panel and said portions of the breaker strips and to add rigidity to said inner panel, said offset portion of the inner panel being substantially the same thickness as said portion adjacent the sealing gasket.

2,307,113. REFRIGERATION. George P. Deiger, Canton, Ohio, assignor to the Hoover Co., North Canton, Ohio. Application Feb. 5, 1940, Serial No. 317,880. 20 Claims. (Cl. 62-119.5).



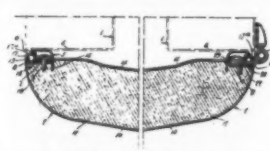
18. A unitary shell for separating the rotor and stator of a dynamoelectric machine for circulating a medium in an absorption refrigerating apparatus comprising, a steel shell in which the atoms of the iron in the end sections are so arranged that the end sections are non-magnetic and those of the central section so arranged that the central section is magnetic.

2,307,121. REFRIGERATOR CABINET CONSTRUCTION. Carl Philip Erickson, Connersville, Ind., assignor, by mesne assignments, to Philco Corp., Philadelphia, Pa., a corporation of Pennsylvania. Application May 9, 1940, Serial No. 334,291. 8 Claims. (Cl. 20-35).



1. In a door for a domestic refrigerator having a dish-out metal outer shell forming the entire front of said door and bounded by rearwardly extending edge portions terminating in coplanar intumed marginal flanges, a one-piece dimensioning and reinforcing ring of rigid angle section disposed within said shell and having a flange at its outer edge extending parallel to the rearwardly extending edge portions of the shell and substantially perpendicular to its intumed marginal flanges, said ring flange being secured to said shell in substantially continuous contact with the inner surface thereof to accurately shape and dimension said door, and said ring having a body portion extending inwardly from said flange in spaced parallel relation with respect to the coplanar marginal flanges of said shell and free from contact with the shell.

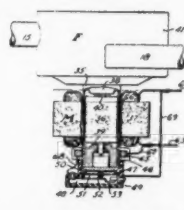
2,307,159. REFRIGERATOR DOOR AND GASKET CONSTRUCTION. Theodore W. Bundell, Jenkintown, Pa., assignor, by mesne assignments, to Philco Corp., Philadelphia, Pa., a corporation of Pennsylvania. Application July 1, 1940, Serial No. 343,489. 3 Claims. (Cl. 20-35).



1. In a domestic refrigerator door comprising an outer shell having an intumed marginal flange, and an inner panel member, a bracket member secured to said outer shell and having a body portion offset inwardly of and parallel to said intumed marginal flange of the shell and

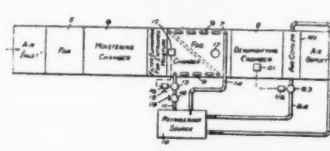
underlying the edge portions of the inner panel member, and a resilient gasket member comprising a lip portion interposed between the lapping portions of the bracket and inner panel members, a bead portion outwardly overlying both the intumed marginal flange of the outer shell and the edge portions of said inner panel, and a shank portion joining said lip and said bead and extending outwardly between the edges of the outer shell intumed marginal flange and the inner panel member.

2,307,168. REFRIGERATION. Donald G. Smellie, Canton, Ohio, assignor to the Hoover Co., North Canton, Ohio. Application Feb. 5, 1940, Serial No. 317,377. 18 Claims. (Cl. 62-119.5).



1. Absorption refrigerating apparatus of the type having a hermetically sealed fluid circulator therein, an electrically driven element for said fluid circulator also sealed within the apparatus, a lubricant for said electrically driven element sealed in said apparatus, said lubricant being of the type which is non-fluid at atmospheric temperatures, an electrical heater for said lubricant, and means for opening the energizing circuit of said electrical heater when the temperature of said lubricant is sufficiently high to maintain the same in the fluid state.

2,307,292. AIR CONDITIONING SYSTEM UTILIZING REFRIGERATION. Robert T. Palmer, Sharon, Mass., assignor to B. F. Sturtevant Co., Boston, Mass. Application Aug. 17, 1940, Serial No. 352,997. 2 Claims. (Cl. 261-9).



1. An air conditioning system comprising an air moistener, a fog chamber for receiving air from said moistener, a source of refrigeration connected to said chamber for chilling the air therein, and means including means responsive to changes in the dew point temperature of the air entering said chamber for regulating the refrigeration from said source to maintain a fog in said chamber by decreasing the refrigeration upon increase in the dew point temperature and by increasing the refrigeration upon decrease in the dew point temperature.

(To Be Continued)

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REFRIGERATION Control

Numerous Revisions Made in Order Covering Refrigeration Service Work

(Concluded from Page 1, Column 5)

As defined in the order, the term does not include mechanical or ice type domestic refrigerators, which means that no priority ratings are extended for repair parts on household refrigeration systems.

DOESN'T INCLUDE HIGHSIDE

The term "emergency repair service" has been redefined in such a manner that the term does not include replacement of the high side or condensing unit (with or without motor or condenser) except in sealed units, the low side, or the insulated enclosure. The term includes only the component parts of the high side, low side, or insulated enclosure.

The ratings may be applied by existing designated emergency service agencies by endorsement providing they are applied in accordance with terms of the order as amended. Specific instructions for the method of endorsement are included in the order.

ANY AGENCY CAN APPLY

Any person or agency, without designation, who is customarily engaged in rendering repair service for refrigeration or air conditioning equipment, may apply for an emergency service agency's certificate on Form PD-399, if rendering repair service for others, or on Form PD-471, if the applicant is an owner or lessee performing his own repair service.

The amended order also requires that any replaced metal part must be returned to the emergency service agency who in turn may repair it, return it to his supplier, or dispose of it to a scrap dealer during or within 30 days after each calendar quarter.

NEW FIRMS MUST SHOW NEED

Regarding the inventory of an emergency service agency, the amended order restricts the use of ratings to obtain parts for that inventory to the extent that such inventory may not exceed that which the service agency held on Dec. 31, 1941.

It is important to note that an emergency service agency which maintained no inventory of parts in

1941 shall not apply any preference ratings under this order to obtain parts for inventory. If such agency considers that compliance with this restriction would prevent the rendering of essential service in its community, this agency may apply for specific authorization to permit it to apply ratings to obtain parts for inventory.

The order provides that the Director General for Operations may assign higher ratings upon written or telegraphic request for emergencies where the ratings in Class I, II or III are shown to be inadequate.

Dinegar Heads Consumers Durables Branch, OCS

(Concluded from Page 1, Column 2)

Furniture Unit
Photographic Equipment and Supplies Unit
Trade Supplies, Personal Good and Equipment Unit

Service and Technical Equipment Section:

Service Machinery Unit
Safety and Technical Equipment Unit
Radio, Electronics, Ceramics and Glass Unit

Medical and Health Supplies Section:

Drugs and Cosmetics Unit
Hospital and Health Supplies Unit

Post-War Plans Studied At Carrier Conference

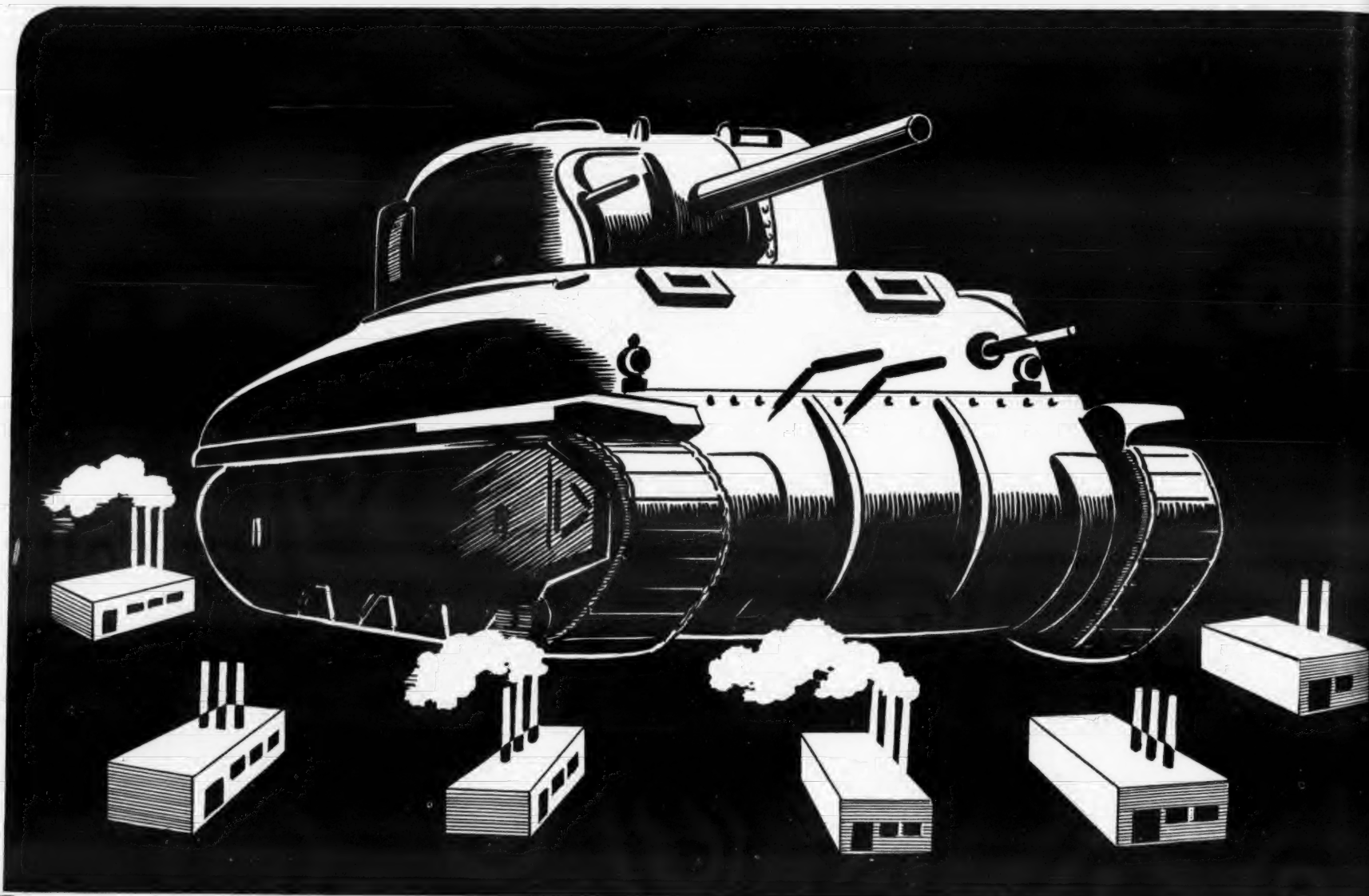
(Concluded from Page 1, Column 4)

reviewed the period between the two World Wars and steps by each for post-war plans. Discussed also were availability of market data, selling postwar goods, furthering as the American way free enterprise and peacetime economic effects of demobilization and providing food, shelter and clothes abroad and at home.

Plans were made for a meeting again in a few months.

The planners for the future attending the conferences included: S. A. Holme of Schnectady, General Electric Co.; J. K. Dwen, Dayton,

Ohio, National Cash Register Co.; Lyman H. Hill, Evansville, Ind., Serval, Inc.; Paul S. Ellison, New York, Sylvania Co.; John M. Musser, St. Paul, Weyerhaeuser Sales Co.; David R. Osborne, South Bend, Ind., Studebaker Corp.; K. G. Stuart, Rochester, Eastman Kodak Co.; Francis J. Curtis, St. Louis, Monsanto Chemical Co.; Ray P. Winberg, Rome, N. Y., Revere Copper & Brass Co.; Odin Thomas, Dearborn, Mich., Ferguson-Sherman Mfg. Co.; R. A. Dadisman, Middletown, Ohio, American Rolling Mills; Herbert Metz, New York, Graybar Electric Co.; Donald M. Hobart, Philadelphia, Curtis Publishing Co.; S. Morris Livingston, of the U. S. Department of Commerce; A. D. Patterson, Pittsburgh, Aluminum Company of America, and B. A. McDonald, Buffalo, Curtiss-Wright Co.



Plan Study of Water Cooler Essentiality

(Concluded from Page 1, Column 3)

are—C. M. Cordley, Cordley & Hayes Co.; H. F. Hildreth, Westinghouse Electric & Mfg. Co.; L. C. Lowe, Ebco Mfg. Co."

Members of the industry who have had contact with the WPB consider the announcement of the plan for a study of the "essentiality" of drinking water coolers to be especially significant.

The refrigeration industry for some time has sought an opportunity to discuss with government officialdom the matter of the essentiality of its products, and the appointment of a task committee to study and report on this subject is one of the first official recognitions of this point.

It is understood that representatives of the U. S. Armed Forces as well as WPB officials met with the Water Cooler Industry Advisory Committee, and were receptive to the representations made by the manufacturers with respect to a thorough study of the matter.

Price Order 110 Covers Any Household Box

WASHINGTON, D. C.—All household mechanical refrigerators, regardless of how they are used by purchasers, are subject to Maximum Price Regulation 110, "Resale of New Household Mechanical Refrigerators," according to a new interpretation issued here by Office of Price Administration.

To illustrate the decision, OPA explains that a refrigerator of large cubic capacity made for household use but purchased for use in a restaurant or other commercial establishment is covered by the regulation.

GO GET IT - IT'S THERE



All right! A-l-l right! DON'T take our word for it. But here's what AIR CONDITIONING & REFRIGERATION NEWS says about business.

"Sales of cooling equipment to war plants in 1943 may approach 50 million dollars, with dozens of new applications yet untouched. Alert members of the trade, on their toes to the new opportunities existing for sales to industry today, are getting volume business."

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Processing Coolers, Benzol Freezing Process, Anodizing Tanks, Shrink Fitting Operations, Rubber Production Control, Glass Processing Control, Synthetic Silk Production, Electrical Control Production, Abrasives Adhesion Control, Synthetic Paint Processing, Photographic Film Coating, Rolling Mill Air Conditioners, Blackout Factory Conditioners,

TESTING: Test Cabinets, Room Conditioners, Altitude Chambers, Depth Chambers, Engine Test Cells, Munitions "Shock" Testers, Gauge Testing Rooms, Engine Oil Testing.

ASSEMBLY: Room Conditioners, Metal Shrinkers, Instrument Assembly Control, Subzero Steel Hardening, Blackout Plant Cooling, Optical Manufacturing Air Control, Communications Equipment Air Control, "Dope Room" Air Conditioning.

STORAGE: Powder Storage Coolers, Parachute Storage, Storage Chests, Fur Storage, Bullet Plant Drying Rooms, Storage of Chemicals.

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